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INSTRUCTION MANUAL

CD31 & CD33 INDICATORS WITH CHAMP BASES

CD Indicators

Ohaus Corporation, 29 Hanover Road, Florham Park, New Jersey, 07932, USA

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Instrument Type/Waagentyp/Type de instrument/Modelo de instrumento/Tipo di strumento **CD-31/CD-33 Indicators**

Marked with: Gekennzeichnet mit: Munis de la mention: Con el distintivo: Contrassegnati con la Marcatura:	Directive Richtlinie Directive Directiva Direttiva	Standard Norm Norme Norma Norma
CE	EU 73/23 Low Voltage EU 73/23 Niederspannung EU 73/23 Basse tension EU 73/23 Baja tensión EU 73/23 Bassa tensione EU 89/336, 92/31, 93/68 Electromagnetic compatibility EU 89/336, 92/31, 93/68 Elektromagnetische Verträglichkeit EU 89/336, 92/31, 93/68 Compatibilité électromagnétique EU 89/336, 92/31, 93/68 Compatibilidad electromagnética EU 89/336, 92/31, 93/68 Compatibilità elettromagnetica	IEC1010-1 & EN60950:1992 Safety Regulations IEC1010-1 & EN60950:1992 Sicherheitsbestimmungen IEC1010-1 & EN60950:1992 Consignes de sécurité IEC1010-1 & EN60950:1992 Disposiciones sobre seguridad IEC1010-1 & EN60950:1992 Prescrizioni . di sicurezza EN55022:1987 Emissions EN50082-1:1992 Immunity NOTE: The displayed value may be adversely affected under extreme electromagnetic influences, eg. when using a radio unit in the immediate vicinity of the device. Once the interference has been rectified, the product can once again be used for its intended purpose. EN55022:1987 Funkstörungen EN50082-1:1992 Immunität Hinweis: Unter extremen elektromagnetischen Einflüssen z.B. bei Betreiben eines Funkgerätes in unmittelbarer Nähe des Gerätes kann eine Beeinflussung des Anzeigewertes verusacht werden. Nach Ende des Störeinflusses ist das Produkt wieder bestimmungsgemäss benutzbar. EN55022:Emissions parasites EN50082-1:1992 Immunité Remarque: Dans des conditions d'influences électromagnètiques extrêmes, par exemple en cas d'exploitation d'un appareil radio à proximité immédiate de l'appareil la valeur d'affichage risque d'être influencée. Une fois que l'influence parasite est terminée, le produit peut être de nouveau utilisé de manière conforme aux prescriptions. EN55022:1987 Radiointerferencias EN50082-1:1992 Inmunidad Nota: Bajo influencias electromagnèticas extremas, p.ej. cuando funciona una radio en las inmediaciones del aparato, se pueden alterar los valores del display. Cuando concluye el efecto perturbador, el producto puede ser utilizado de nuevo, de acuerdo con lo estipulado. EN55022:1987 Radiointerferenze EN50082-1:1992 Immunità Nota: Il valore visualizzato può essere influenzato negativamente dalla presenza di forti interferenze elettromagnetiche, per esempio quando viene usata una radio in prossimità della bilancia. Eliminata la fonte dell'interferenza, il prodotto può essere nuovamente utilizzato per le funzioni cui è preposto.

James Ohaus
President

NOTE: THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

THIS DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS AS SET OUT IN THE INTERFERENCE-CAUSING EQUIPMENT STANDARD ENTITLED “DIGITAL APPARATUS”, ICES-003 OF THE DEPARTMENT OF COMMUNICATIONS.

CET APPAREIL NUMERIQUE RESPECTE LES LIMITES DE BRUITS RADIOELECTRIQUES APPLICABLES AUX APPAREILS NUMERIQUES DE CLASSE A PRESCRITES DANS LA NORME SUR LE MATERIEL BROUILLEUR : “APPAREILS NUMERIQUES”, NMB-003 EDICTEE PAR LE MINISTRE DES COMMUNICATIONS.

Unauthorized changes or modifications to this equipment are not permitted.

Before plugging in the Indicator, make sure that the voltage of the power adapter and plug match.

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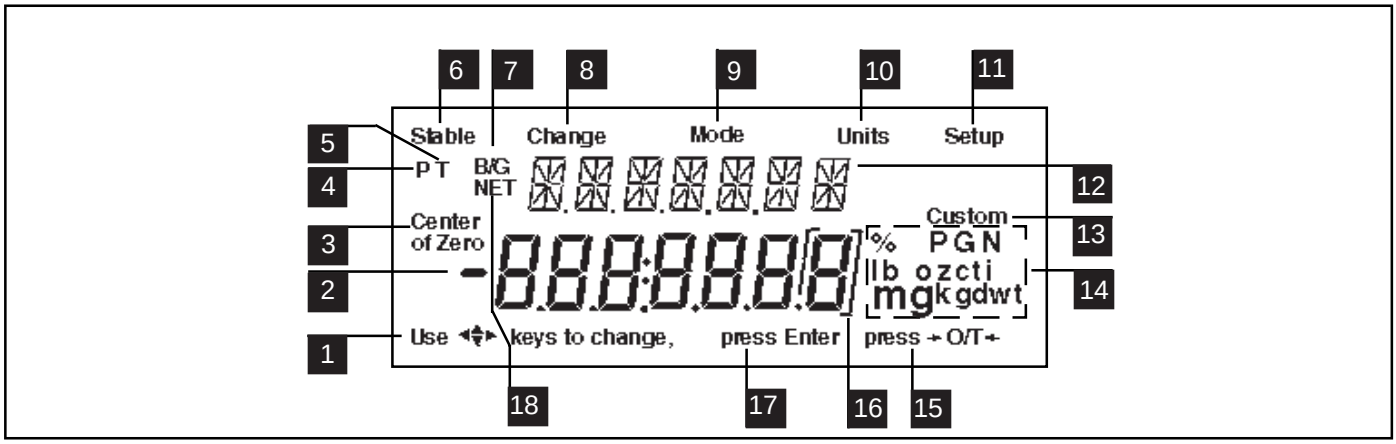
OVERVIEW OF CONTROLS

No.	Designation	Function
1	Mode button	Selects standard weighing, percent, parts counting, check weighing and animal weighing.
2	Setup button	Selects various submenus: scale, calibration, date, time, readout, GMP data, GMP set, print, RS232, LFT, mode, units, global, custom.
3	G/N/T button	Selects Gross, Net or Tare weights.
4	Units button	Selects weighing units: grams, kilograms, pounds, custom, parts counting, percent.
5	>0< button	When pressed, zero's scale.
6	Tare button	When pressed, performs tare function.
7	Numeric keypad	0 to 9 keys and decimal point keypad, used to enter numerical data on Model CD-33.
8	Display	LCD display indicates weight, modes and setup information.
9	Arrow buttons	▲ when pressed, travels up through submenus. ▼ button when pressed, travels down through submenus. ◄ button when pressed, travels to the left through menus. ► button when pressed, travels to the right through menus. Arrow buttons are also used to enter numerical data on Model CD-31.
10	Enter button	When in menus, selects item on display. Also used to turn power on when in sleep mode.
11	Print button	When pressed, prints data.

OVERVIEW OF DISPLAY INDICATORS



No.	Function
1	**Use** (Pointer Group) **keys to change** - used to prompt the user while navigating through the menu system.
2	Standard (7) segment numeric characters. Seven characters are available and are used for displaying weight values.
3	**Center of Zero** - Indicates display is within ± 1/4d of zero.
4	**P** - Displayed if preset tare weight.
5	**T** - Displayed with tare weight.
6	**Stable** - Indicates that the measured value has become stable.
7	**B/G** - Displayed with gross weight.
8	**Change** - Is displayed together with **Mode**, **Units** or **Setup** signifying that a change to balance settings is being performed.
9	**Mode** - Is displayed when the **Mode** button is pressed. Allows the user to know what area of the balance menu is being addressed.
10	**Units** - Is displayed when the **Units** button is pressed. Allows the user to know what area of the balance menu is being addressed.
11	**Setup** - Is displayed when the **Setup** button is pressed. Allows the user to know what area of the balance menu is being addressed.

No.	Function
12	(British Flag) - Are (14) segment alpha numeric characters. Seven characters are used to present features and functions.
13	**Custom** - The user can input a factor to meet unique unit measure applications.
14	Symbols for weighing modes, include: **g** - Grams. **kg** - Kilograms. **lb** - Pounds. **PC** - Parts counting. **%** - Percent weighing.
15	**Press >O/T<** -This symbol is not used.
16	⌜ ⌟ - This sysmbol is not used.
17	**Press Enter** - Used as a prompt to the user to press the **Enter** button. The menu item displayed is accepted/selected.
18	**NET** - Displayed with net weight.

1. GETTING TO KNOW YOUR INDICATOR

1.1 Introduction

Thank you for deciding to purchase a CD-31/CD-33 Indicator from Ohaus. It offers a high level of operating convenience and useful functions to make accurate measurements. A unique LCD panel has a large 7 digit, 7 segment display which indicates the weight value of an item being measured and a 7 digit British Flag display (14 segments) which spells out items selected in the submenus. In addition, the display contains English text to indicate the status of the scale. Arrow indicators in the display provide a prompt as to what panel buttons are to be pressed to initiate a change. The maximum capacity which can be displayed on the Indicator is 199,999 pounds or kilograms. The Indicator can be table mounted, wall mounted, or tower mounted.

The Indicator is designed to operate with a wide variety of Ohaus scale bases and other scale bases that contain up to 4-350 ohm load cells.

Behind your instrument stands OHAUS, a leading manufacturer of precision Indicators, Scales and Balances. An Aftermarket Department with trained instrument technicians is dedicated to provide you with the fastest service possible in the event your instrument requires servicing. OHAUS also has a Customer Service Department to answer any inquiries regarding applications and accessories.

To ensure you make full use of the possibilities offered by your CD-31/CD-33 Indicator, please read the manual completely before installation and operation.

2. INSTALLATION

2.1 Unpacking and Checking

Open the package and remove the instrument and the accessories. Check the completeness of the delivery. The following accessories are part of the standard equipment of your new Indicator.

- Remove packing material from the instrument.
- Check the instrument for transport damage. Immediately inform your Ohaus dealer if you have complaints or parts are missing. Your Indicator package should contain:
    - Indicator CD-31 or CD-33
    - AC Adapter, 9 V dc, 500 ma output
    - Instruction Manual
    - Warranty card
    - Capacity label
    - Plain screwdriver
    - Lead & wire calibration seal
    - Cover plate and (2) screws
- Store all parts of the packaging. This packaging guarantees the best possible protection for the transport of your instrument.

2.2 Selecting the Location

The Indicator should be used in an environment which is free from corrosives, vibration, and temperature or humidity extremes. These factors will affect displayed weight readings. Scale bases used with the Indicator should be located on a stable level surface and kept away from vibrating sources such as large machinery. Maximum accuracy will be achieved when the area is clean and vibration free.

2.3 Connecting the Indicator to a Scale Base

- Turn the Indicator over.

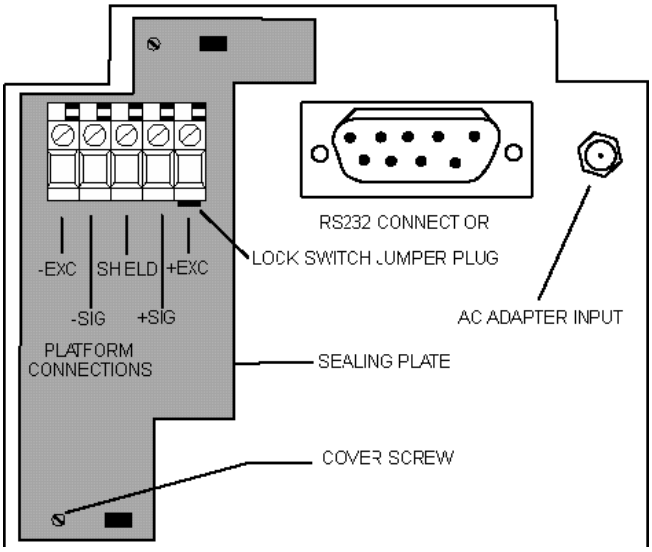
NOTE:Check the wiring instructions of your scale base.

- The Terminal Block located at the left side of the access area is used to connect a scale base using a 4-wire cable and ground. If a 6-wire cable is supplied with the scale base, tie the +SENSE and +EXC leads together and connect to the +EXC connector. Tie the -SENSE and -EXC leads together and connect it to the -EXC connector on the Indicator.

- Connect the wires to the Terminal Block. Tighten all screws securely.

- To provide a strain relief, dress the wire cable from the scale base in the channel provided on the bottom of the indicator.

- If the Indicator is not used in a legal for trade application, install the sealing plate at the bottom of the Indicator and secure with two screws as shown on the illustration.



2.4 Connecting the RS232 Interface

CD-31/CD-33 Indicators are equipped with a standard IBM™ compatible, bi-directional RS232 interface for communication with printers and computers. When the Indicator is connected directly to a printer or Programmable Logic Controller (PLC), displayed data can be recorded at any time by simply pressing the PRINT button.

Connecting the Indicator to a computer or PLC enables you to operate several functions of the Indicator from the computer, as well as receive data such as displayed weight, weighing mode, stability status, etc.

RS-232 Connector Pin Layout.

1	N/C
2	Data In (RXD)
3	Data Out (TXD)
4	Data Terminal Ready (DTR)
5	Ground
6*	Tare (External signal)
7	Request To Send (RTS)
8	Clear To Send (CTS)
9*	Print (External signal)

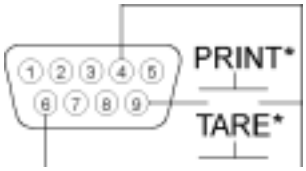
2.4.1 Hardware

A 9-pin “D” connector is located inside of the recessed area at the bottom of the indicator. Pin connections are shown in the adjacent illustration.

Connect an Ohaus RS232 cable to the Indicator. Refer to paragraph 5.5 Accessories.

Remote Tare Option

External PRINT and/or TARE switches may be installed as shown in the diagram to the right. Momentary contact switches must be used.



2.5 Connecting Power

Connect the AC Adapter supplied to the connector located at the bottom of the Indicator. Route the wire from the AC Adapter through the channel in the bottom of the Indicator. This will relieve stress on the connector and hold the wire in place.

2.5.1 Cautionary Notes

- Models CD-31 and CD-33 Indicators **must not** be operated in **hazardous areas.**
- Before connecting the AC adapter, verify that the voltage printed on it corresponds to the local mains voltage. If this is not the case, please contact your local Ohaus dealer.
- Model CD-31 and CD-33 Indicators may only be used in a dry environment.

2.5.2 Turning On the Indicator

NOTICE:
The socket/outlet must be installed near the equipment and shall be easily accessible.

- Plug the AC adapter to an appropriate power supply. Power is now applied to the Indicator.
- The Indicator performs a self-test. This test is finished when the display indicates WEIGH.

2.5.3 Power ON/OFF

The CD-31 and CD-33 Indicators consume minimum power. The Indicator **does not** have an ON/OFF button for power. It is recommended not to remove power from the Indicator to ensure longer life of the circuitry and display. If you desire to use the sleep mode, refer to paragraph 3.2 under Readout for settings. **NOTE**: Sleep mode when set on removes power only from the display after 5 minutes. Power remains applied to the Indicator at all times when connected to a power source.

Stabilization

Before initially using the Indicator, allow time for it to adjust to its new environment. When the CD-31/CD-33 is first plugged in, the recommended warm up period is five (5) minutes. The internal circuits of the Indicator are powered whenever it is plugged into a power source

2.6 Scale Base Setup

In this section, you will enter the menu for the first time. Do not worry if you are unfamiliar with the function of the buttons on the panel, the display provides the necessary coaching as you go along. Before the Indicator can be used, the parameters for the scale base being used with the Indicator must be set first in order to calibrate and perform any functions.

The indicator itself has three basic menus; each is selected by front panel buttons marked **Mode**, **Units** and **Setup**.

Mode Button
The Mode button, when pressed, permits the selection of 5 weighing modes which are: weigh, percent, count, animal weighing and checkweigh. These modes are controlled by an ON or OFF selection made in the Setup menu under the submenu **Mode** as displayed.

Units Button
The Units button, when pressed, allows the Indicator to display values in a selected measuring unit of either grams, kilograms, pounds, custom, parts counting or percent.

Setup Button
The Setup button, when pressed, allows entry into 14 submenus which allows you to set the Indicator for specific operating parameters. Each of the 14 submenus contain settings which are user selectable. The table which follows the scale base setup illustrates the various submenus and the functions which are selectable. The items shown on the menu, which are bolded, are the factory default settings. In other words, if you did not enter the Setup menu, the Indicator would function in the basic manner shown by the various settings which are bolded. The setup submenus shown are arranged in the order as displayed in the Indicator.

Scale Menu

The Scale menu is the first menu presented when the Setup button is pressed. This menu allows you to set the proper parameters of the scale base such as zero setting, calibration unit, graduations, full scale capacity and to lock all settings. The definitions are as follows:

- **Zero** - The percentage of capacity which the user is allowed to zero the scale base and can be set to 2%,18% or 100%. If the weight on the scale base is greater than the selected percentage, the >0< button will not respond.

- **Cal Unit** - kg, lb are used to set the scale base capacity and calibrate the unit. If the display units are the same as the Cal unit, then weight displayed on the Indicator will be a multiple of the Grad setting.

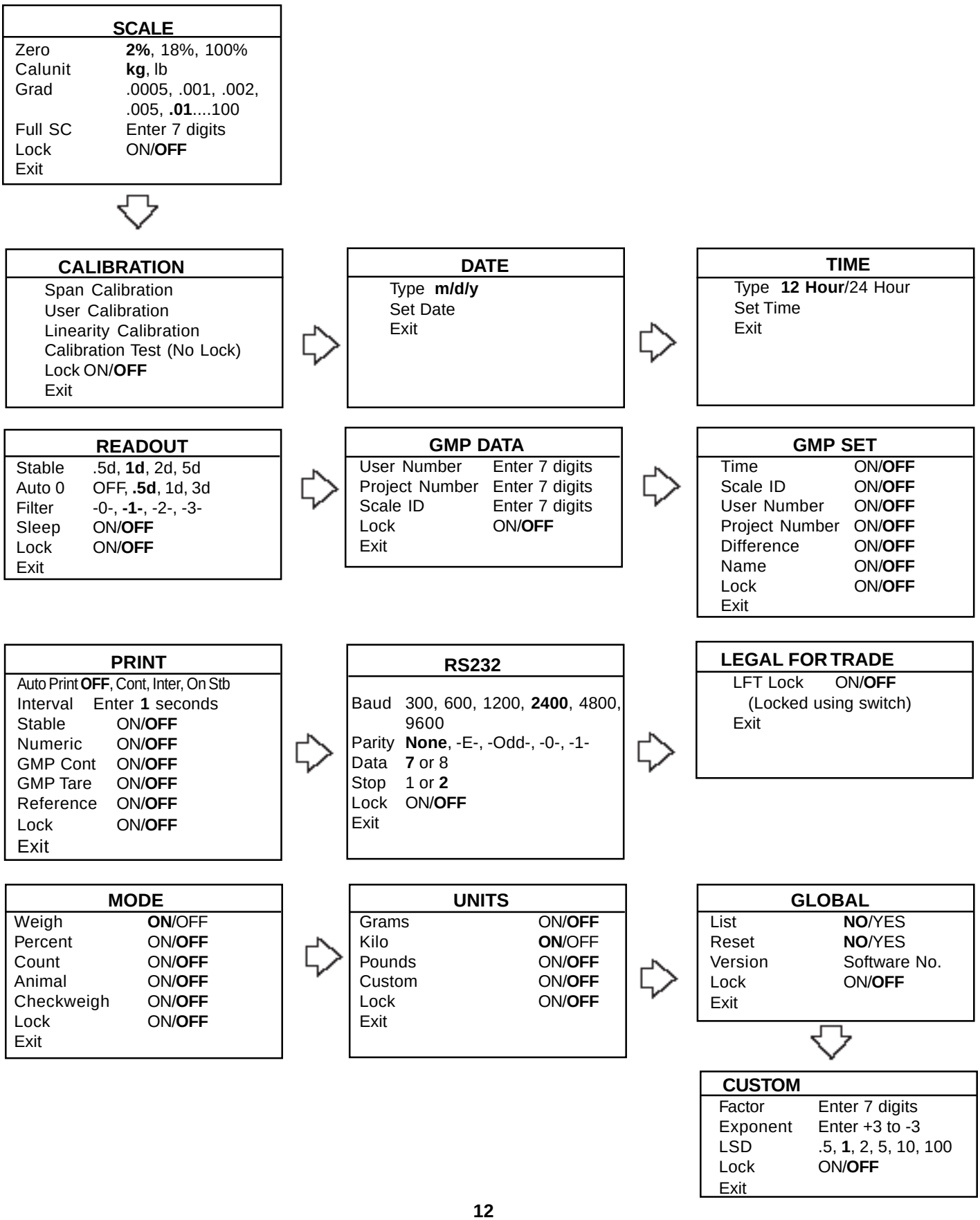
- **Grad** - The display increment of the scale base can be set to .0005, .001, .005, .01, .02, .05, .1, .2, .5, 1, 2, 5, 10, 20, 50, 100. The weight displayed on the scale will always be a multiple of the Grad (graduation).

- **Full Sc** - This represents full scale base capacity and the user may enter 7 digits. Number may be entered using the arrow or numeric buttons. This number must be between 1 and 199999.

Review the Indicator menus on the next page before proceeding.

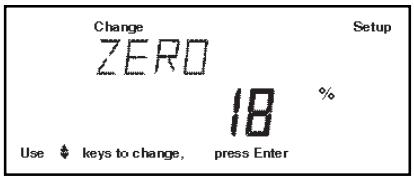
2.6 Scale Base Setup (Cont.)

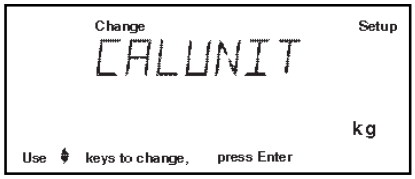
SETUP SUBMENUS

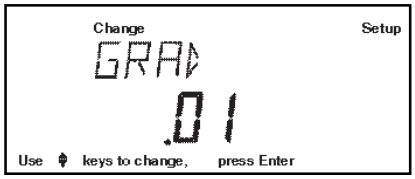


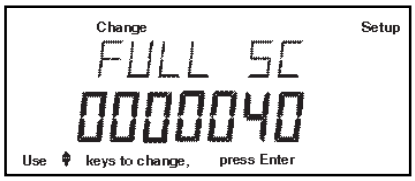
2.6 Scale Base Setup (Cont.)

Review the specifications of the scale base to be used with the Indicator. Make sure the settings you select in the indicator are compatible with the scale base. Alternate displays are shown in this procedure to save space.









Procedure

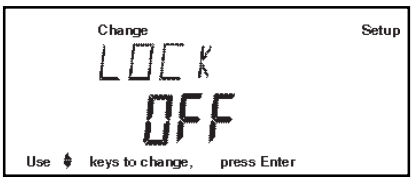
- Press the **Setup** button, SCALE is displayed.

ZERO
Zero specifies the percentage of full capacity load (2%, 18% or 100%) that may be cleared by pressing **>0<**. Limits may be required in certain applications.

NOTE: 2% Zero capacity is used for hopper scales or other large scales where accidental zero would lose the current weight. Bench and counter scales normally use 100% Zero capacity. Legal for trade applications use 2%.

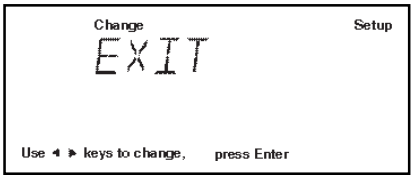
- Press **Enter** button, ZERO is displayed.
- Press **Enter** button, ZERO 2% (default) is displayed.
- Press ▲ ▼ and select either 2%, 18% or 100%.
- Press **Enter** button, SAVED is momentarily displayed then CALUNIT is displayed.
- Press **Enter** button, CALUNIT kg is displayed.
- Press ▲ ▼ and select either kg or lb, then press Enter button, SAVED is momentarily displayed then GRAD.
- Press **Enter** button, GRAD .01 is displayed.
- Press ▲ ▼ and select desired setting from .0005 to 100 for scale graduation.
- Press **Enter** button, SAVED is momentarily displayed and FULL SC is displayed.
- Press **Enter** button, FULL SC with a 7 digit number is displayed, with the first digit flashing. Illustration indicates a 40 kg scale setting.
- Press ▲ ▼ and or ◄ ► and enter the desired scale base capacity when using Model CD-31. The numerical keypad can be used for Model CD-33. Remember that this number represents either pounds or kilograms, whatever was previously set for cal unit.
- Press **Enter** button, SAVED is momentarily displayed followed by LOCK.

2.6 Scale Base Setup (Cont.)



- Press **Enter** button, LOCK OFF is displayed, select either ON or OFF using ▲ or ▼ buttons, then press **Enter** button SAVED is momentarilydisplayed followed by EXIT.

When LOCK OFF= jumper on the bottom is in place, Setup is unlocked.
When LOCK ON= jumper was removed, setup is locked.



- Press **Enter** button, Indicator returns to a weigh mode.

The Indicator is now matched up with the scale base and the Indicator parameters may now be set and calibrated.

3. SETTING UP YOUR INDICATOR

3.1 Setting Date and Time

Your Indicator provides date and time data which can be viewed on a computer or printed out on an external printer. When you put your new instrument into operation for the first time, you should enter the current date and the time. These settings are retained as long as the Indicator remains connected to a power source.

Date

Date is a feature which enables the Indicator to be set to a U.S.A. date standard or European date standard. U.S. standard has the month, date, followed by the year, each separated by (/) in the printout. The European date standard has the day first, followed by the month and then the year; each separated by a period. The default setting is **U.S.A. Standard.**

Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button and select Date from the menu.
- Press **Enter** button, TYPE is displayed.
- Press **Enter** button, TYPE M d y, d M y, y M d, M y d, y d M, or d y M is displayed.
- Press ▲ or ▼ button and select type of date.
- Press **Enter** button, SAVED is displayed, then SET is displayed.
- Press **Enter** button, first digit of date is flashing.
- Using arrow buttons or numerical buttons, enter the correct date.
- When the correct date is entered, press **Enter** button, SAVED displays momentarily and EXIT appears.
- Press **Enter** button, Indicator returns to a weighing mode.

Time

Time is a feature which enables the Indicator to be set to the current time in either 12 hour or 24 hour periods. The default setting is 12 hours.

Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button and select Time from the menu.
- Press **Enter** button, TYPE is displayed.
- Press **Enter** button, TYPE 12 hr is displayed.
- Press ▲ or ▼ button and select 12 hr or 24 hr.
- Press **Enter** button, SAVED is displayed momentarily then SET is displayed.
- Press **Enter** button, SET with the time is flashing.
- Using arrow buttons or numerical buttons, enter the correct time.
- When the correct time is entered, press **Enter** button, SAVED displays momentarily and EXIT appears.
- Press **Enter** button, Indicator returns to a weighing mode.

3.2 Readout

The Readout menu is used to adapt the Indicator to environmental conditions. It contains five submenus: **Stable**, **Auto 0, Filter**, **Sleep, Lock** and **Exit.** Lock enables you to lock the settings. Review the settings available below before proceeding.

Stability

The stability range specifies the weighing results and must be within a preset tolerance limit for a certain time to turn the stability indicator ON. When a displayed weight changes beyond the allowable range, the stability indicator turns OFF, indicating an unstable condition. Factory default setting is shown in bold type.

.5 d Smallest range: stability indicator is ON only when displayed weight is stable within .5 divisions.
1 d Normal range.
2 d Medium range.
5 d Largest range, stability indicator is ON even though displayed weight changes slightly.

When the RS232 communication parameters are configured to print stable data only, the stability range also governs data output. Displayed data will only be output if it is within the selected stability range.

Auto-0 (Auto-Zero)

Auto-0 minimizes the effects of temperature changes and shift on the zero reading. The Indicator maintains the zero display until the threshold is exceeded. Factory default setting is shown in bold type.

OFF Turns Auto-Zero OFF.
.5 d Sets threshold to .5 divisions.
1 d Sets threshold to 1 division.
3 d Sets threshold to 3 divisions.

Filter

Filter compensates for vibration or excessive air currents. Default settings is shown in bold type.

-0- reduced stability, fastest stabilization time
-1- normal stability, normal stabilization time
-2- more stability, slow stabilization time.
-3- maximum stability, slowest stabilization time.

Sleep On/Off

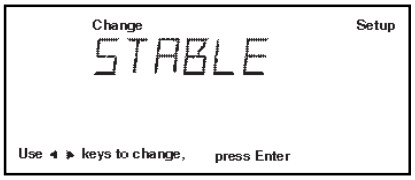
When set ON, power will be removed from only the display in 5 minutes after last weighing. When set OFF, power remains on all of the time to the Indicator circuitry and display. To turn power ON, press **Enter**.

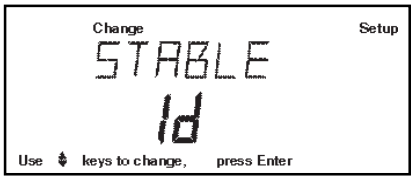
Lock

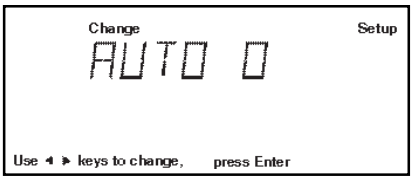
Lock ON/OFF can only be changed when the hardware Lock Switch is set OFF/disabled (jumper on). A menu is locked when the menu software lock is set ON and the physical Lock Switch is enabled. Lock (jumper removed), when selected and turned on, locks all of the entries made under the Readout menu. In the locked condition, items may be looked at in the menu but not changed. When set off, entries may be changed. **OFF** is the default setting.

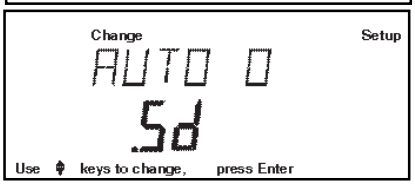
NOTE: When Lock Switch jumper on the bottom of the Indicator is in place, Lock is OFF and Readout menu **can be** changed. When Lock Switch jumper is removed, Lock is ON and Readout menu **cannot be** changed.

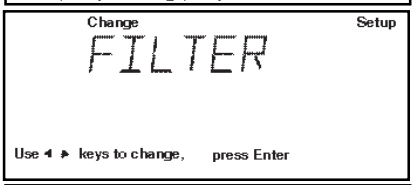
3.2 Readout (Cont.)

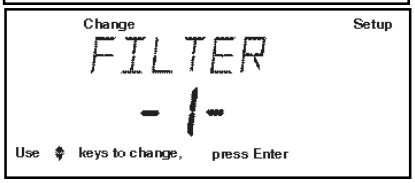


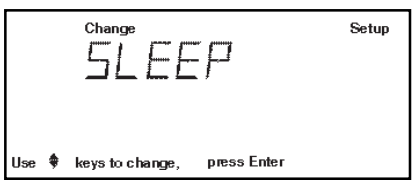






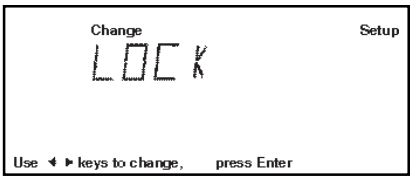


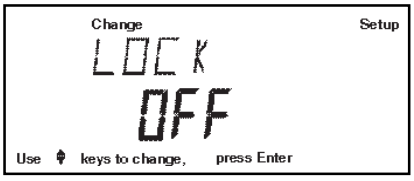


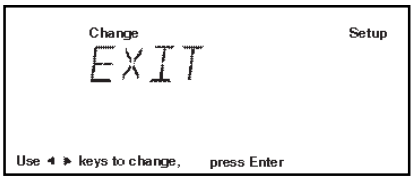


Procedure

- Press the **Setup** button, SCALE is displayed.
- Press (►) button until READOUT is displayed.
- Press **Enter** button, STABLE is displayed.
- Press **Enter** button, STABLE .5d is displayed.
- Press (▲) or (▼) button and select either .5d, 1d, 2d, or 5d. 1d is the default setting.
- Press **Enter** button, SAVED is momentarily displayed. Display advances to AUTO 0.
- Press **Enter** button, AUTO 0 .5d is displayed.
- Press (▲) or (▼) button and select either .OFF, .5d, 1d, or 3d. .5d is the default setting.
- Press **Enter** button, SAVED is momentarily displayed. Display advances to FILTER.
- Press **Enter** button, FILTER -1- is displayed.
- Press (▲) or (▼) button and select either .-0-, .-1-, -2-, or -3-. -1- is the default setting.
- Press **Enter** button, SAVED is momentarily displayed. Display advances to SLEEP.
- Press **Enter** button, SLEEP OFF is displayed.
- Press (▲) or (▼) button and select either ON or OFF.
- Press **Enter** button, SAVED is displayed momentarily. display advances to LOCK.
- Press **Enter** button, LOCK OFF is displayed.
- Press (▲) or (▼) button and select either ON or OFF.
- Press **Enter** button, SAVED is displayed momentarily. display advances to EXIT.
- Press **Enter** button to save settings. Indicator returns to weigh mode.

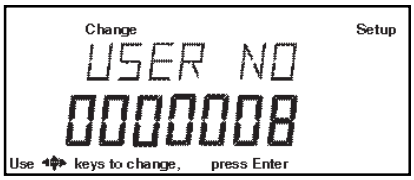


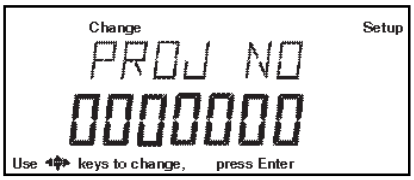


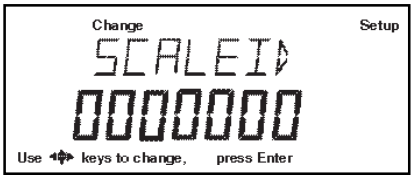


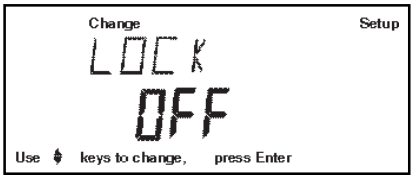
3.3 Good Manufacturing Practices (GMP) Data

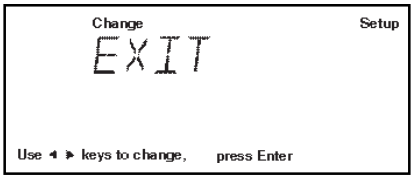
The GMP Data submenu enables the storage of a user identification number (7 digits), a project number (7 digits), and a Scale ID number (7 digits). When entered into the Indicator, the identification number, project number and Scale ID are available when printing providing they are turned on in the GMP Set submenu. A lock setting is also available which locks the settings.











Procedure

To select any of the items in the GMP Data menu, proceed as follows:

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button until GMP DATA is displayed.
- Press **Enter** button, USER NO is displayed.
- Press **Enter** button to continue.
- Press ◄ ► or ▲ ▼ buttons or numerical buttons and enter a 7 digit number for the user USER NO number.
- Press **Enter** button to save setting, PROJ NO is displayed.
- Press **Enter** button to continue.
- Press ◄ ► or ▲ ▼ buttons or numerical buttons and enter a 7 digit number for the project number.
- Press **Enter** button to save setting, SCALE ID is displayed.
- Press **Enter** button to continue.
- Press ◄ ► or ▲ ▼ buttons or numerical buttons and enter a 7 digit number for the balance ID number.
- Press **Enter** button to continue, LOCK is displayed.
- Press **Enter** button. Using arrow buttons, select ON or OFF. When Lock Switch jumper is in place, LOCK OFF = data can be changed. When Lock Switch jumper is removed, LOCK ON= data is locked and cannot be changed.
- Press **Enter** button, EXIT is displayed, press **Enter** button, Indicator saves settings and returns to weigh mode.

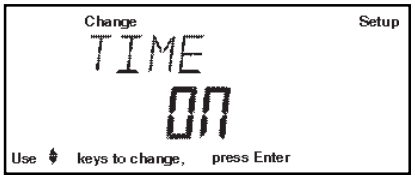
3.4 Good Manufacturing Practices (GMP) Set

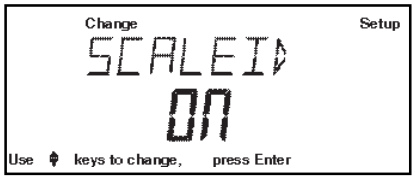
Good Manufacturing Practices (GMP) Set submenu allows the selection of: Time, Scale Identification Number, User Identification Number, Project Number, Difference and Name data to be printed. When the selected items are set to ON, these items are displayed. The default setting is OFF. When an external printer is used, and all items are set ON and the Indicator is calibrated, the printer will print out calibration data for audit trail purposes and will indicate date, and time. (It should be noted that the User ID number and Project number must be entered in the GMP Data submenu before printed data is available).

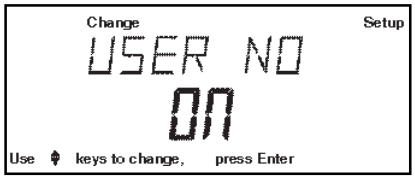
Procedure

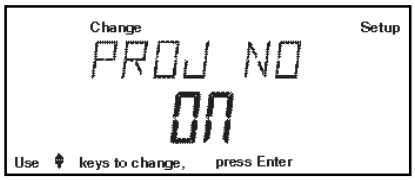
To select any of the items in the GMP Set menu, proceed as follows:

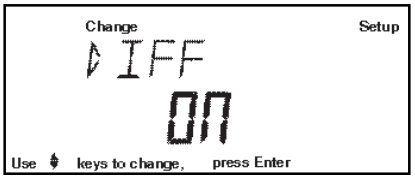
- Press the **Setup** button, SCALE is displayed.
- Press ► button until GMP SET is displayed.
- Press **Enter** button to save setting.
- Press ◄ or ► button until either TIME, SCALE ID, USER NO, PROJ NO, DIFF, NAME, LOCK or EXIT is displayed. Use the next four steps to turn each entry ON or OFF and to advance to next menu item.
- Press **Enter** button to enter submenu.
- Press ▲ or ▼ button and select either ON or OFF.
- Press **Enter** button to save setting.
- Press ◄ or ► button to continue or EXIT.
- Press **Enter** button to save setting.

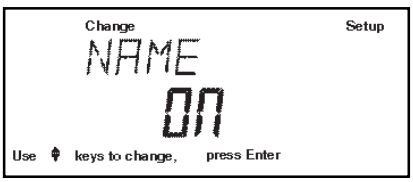


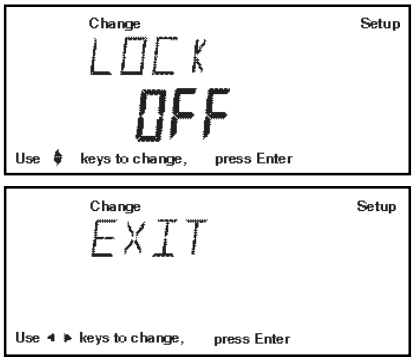












3.5 Print

The Print menu provides a number of options which can be turned ON or OFF. It contains 8 submenus: **Auto Print, Inter**, **Stable**, **Numeric**, **GMPCont, GMP Tare**, **Reference** and **Lock.** See descriptions below.

Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button until PRINT is displayed.
- Press **Enter** button to continue.
- Press ◄ or ► button until either AUTOPRT, INTER, STABLE, NUMERIC, GMPCONT, GMPTARE, REFEREN, LOCK or EXIT is displayed.
- Press **Enter** button to continue.
- Press ▲ or ▼ button and select either menu setting or ON or OFF.
- Press **Enter** button to save setting.
- Press ◄ or ► button to select next item or EXIT.
- Press **Enter** button to continue.

Auto Print Feature

When enabled, the Auto Print feature causes the Indicator to automatically output display data in one of three ways: continuously, at user specified time intervals, or upon stability. Default settings are shown bold.

OFF	**when set on turns off the auto print feature**
Cont	when set on, outputs printed data continuously
Inter	provides a user specified printing interval
On Stb	provides printed data only when a stable reading is achieved

Interval

Can be set to provide a specified printing interval between 1 and 3600 seconds.

Print Stable Data Only

When set On, permits only stable display data to be output. **OFF** is the default setting.

Print Numeric Data Only

When Numeric Data Only function is turned ON, this allows the indicator to output numeric data only for RS232 output. **OFF** is the default setting.

GMP Continuously

When the GMP Continuously function is set ON, it allows the Indicator to output the GMP selections each time a weight value is printed to the printer. **OFF** is the default setting.

GMP Once After Tare

When the GMP Tare function is set ON, it allows the Indicator to output the GMP selections once after tare when the weight value is printed to the printer. **OFF** is the default setting.

Reference

When the Reference function is set ON, it prints the value of weight used as a reference in either Percent and Parts Counting modes. **OFF** is the default setting.

Lock

Lock ON/OFF can only be changed when the hardware Lock Switch is disabled (jumper on). A menu is locked when the menu lock is set ON and the Lock Switch is enabled (jumper off). Lock when selected and turned on, locks all of the entries made under the Print menu. In the locked condition, items may be looked at but not changed in the menu. When set off, entries may be changed. **OFF** is the default setting.

3.6 RS232

The RS232 menu provides communication parameters which can be set to accommodate external printers or computers. It contains four submenus: **Baud** rate, **Parity, Data** and **Lock.** See descriptions below.

Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button until RS232 is displayed.
- Press **Enter** button.
- Press ◄ or ► button until either BAUD, PARITY, DATA, STOP, LOCK or EXIT is displayed.
- Press **Enter** button to save setting.
- Press ▲ or ▼ button and select the desired menu setting.
- Press **Enter** button.
- Press ◄ or ► button to continue or EXIT.
- Press **Enter** button to save setting.

Baud Rate

This submenu is used to select the desired baud rate. There are six available baud rates to choose from: 300, 600, 1200, 2400, 4800 and 9600. The default setting is **2400**.

Parity

Parity can be set to none,Odd, Even, 0, or 1. The default setting is **None**.

Data

Can be set to 7 or 8. Default is **7**.

Stop

Stop bits can be set to 1 or 2. Default is 2.

Lock

Lock ON/OFF can only be changed when the hardware Lock Switch is set disabled (jumper on). A menu is locked when the menu lock is set ON and the Lock Switch is enabled (jumper off). Lock when selected and turned on, locks all of the entries made under the RS232 menu. In the locked condition, items may be looked at but not changed in the menu. When set off, entries may be changed. **OFF** is the default setting.

3.7 Legal for Trade (LFT)

Legal for Trade (LFT) is a software controlled option which can be set to LFT LOCK. When LFT LOCK is set ON, certain items in the Calibration, Readout, Print, Mode and Units menus are automatically preset and locked. This is done to permit the Indicator to operate in a legal for trade application and works in conjunction with a Lock Switch (jumper). Default setting is UNLOCKED, which limits display resolution to 1:10,000. See default table.

DEFAULT TABLE

LFT and Lock Switch	Menu lock	Available Settings
Scale Menu		
Zero	Locked	2%
Calibration Unit	Locked	lb or kg
Grad	Locked	1:10,000 max.
Full Scale	Locked	ON
Lock	Locked	ON
Calibration Menu		
Span, Linearity, User	Locked	
CalTest	Unlocked	
Readout Menu		
Stability	Unlocked	.5d (limited to .5d and 1d)
Auto zero	Unlocked	.5d (limited to OFF and .5d)
Filter Level	Unlocked	-1-
GMP Data Menu	Unlocked	
GMP Selections	Unlocked	
Print Options	Unlocked	
RS232 Menu	Unlocked	
LFT Menu	Lockswitch Locked	
Mode menu	Locked	Weigh
Units Menu	Locked	Cal unit*
Global Menu	Locked	
Custom Menu	Unlocked	

If Print Numeric Data is turned ON, then Print Stable Data Only is locked ON.

* Any unit which was enabled may be selected as a weighing unit. Default is the calibration unit. Custom unit is disabled in LFT and can not be selected as a weighing unit.

Procedure

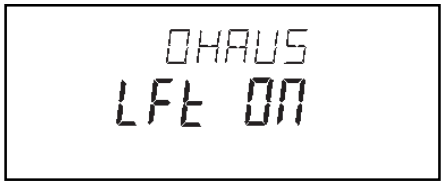
When LFTLOCK is set to ON, None of the settings in the menus which are listed as Locked in the default table can be altered.
The settings in the menus which are listed as Unlocked in the default table may be altered if: A) The Lockswitch jumper is on (Lockswitch disabled) or B) The Lockswitch jumper is off (Lockswitch enabled) and the Menulock is off.

When LFTLOCK is set OFF:
The settings of all menus may be altered if: A) The Lockswitch jumper is on (Lockswitch disabled); or B) The Lockswitch jumper is off (Lockswitch enabled) and the Menulock is off.

- Press the **Setup** button, SCALE is displayed.
- Press (►) button repeatedly until LFT is displayed.
- Press **Enter** button, LFT LOCK is displayed.
- Press **Enter** button.
- Press (▲) or (▼) button and select either ON or OFF.
- Press **Enter** button, SAVED is momentarily displayed, then EXIT is displayed.
- Press **Enter** button, Indicator returns to weigh mode.

NOTE: For legal for trade applications, the indicator must be physically sealed. Refer to section on LFT Sealing.

When the Indicator is first turned ON and LFT has been previously set ON, the following display will appear if LFT is set in the menu and the Lock Switch is set ON.



When the Indicator is first turned ON and LFT has been previously set ON, the following display will appear if LFT is set in the menu and Calibration menu is locked, and the Lock Switch is enabled (jumper off).

CAL SAFE message appears when Lock Switch is enabled (jumper off) and Calibration menu lock is ON.

3.8 Mode

The Mode submenu permits the selection of 6 modes which can be turned ON or OFF. These modes are: **Weigh**, **Percent**, **Count**, **Animal, Checkweigh** and **Lock**. Weigh is turned ON and all others have a default setting of **OFF**. When any of the modes are turned ON, they can be selected for operation from the Mode button.

Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button until MODE is displayed.
- Press **Enter** button.
- Press ◄ or ► button until either WEIGH, PERCENT, COUNT, ANIMAL, CHECKWEIGH, LOCK or EXIT is displayed.
- Press **Enter** button.
- Press ▲ or ▼ button and select either ON or OFF.
- Press **Enter** button to save setting.
- Press ◄ or ► button to continue or **EXIT**.
- Press **Enter** button to save setting.

Weigh

The Weigh submenu is always set to **ON** as a default.

Percent

Percent weighing permits you to place a reference load on the scale base platform, then view other loads as a percentage of the reference. Selection is made using the **Mode** button. The default setting is **OFF**.

Count

Counting is used when counting quantities of parts. Selection is made using the **Mode** button. The default setting is **OFF**.

Animal

Animal weighing provides special settings to accommodate animal movements. Selection is made using the **Mode** button. The default setting is **OFF**.

Checkweigh

Checkweigh mode permits you to weigh an item, set parameters such as minimum weight and over weight. Subsquent items can be weighed against the criteria set in the Indicator. The parameters are set when in the Mode operation and set to Checkweigh. The default setting is **OFF**.

Lock

Lock ON/OFF can only be changed when the hardware Lock Switch is disabled (jumper on). A menu is locked when the menu lock is set ON and the Lock Switch is enabled (jumper off). Lock when selected and turned on, locks all of the entries made under the Mode menu. In the locked condition, items may be looked at but not changed in the menu. When set off, entries may be changed. **OFF** is the default setting.

3.9 Units

The Units submenu permits the selection of the measuring units which can be turned ON or OFF and locked.

Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button until UNITS is displayed.
- Press **Enter** button to continue.
- Press ◄ or ► button until desired measuring unit is displayed.
- Press **Enter** button to continue.
- Press ▲ or ▼ button and select either ON or OFF.
- Press **Enter** button to save setting.
- Press ◄ or ► button to select next item or EXIT.
- Press **Enter** button to continue.

Units

Measuring units settings are made using the Units button. This menu permits the measuring units to be turned ON or OFF. The default setting is **OFF** for all units except kilograms which is set ON.

Lock

Lock when selected and turned ON, locks all of the entries made under the Units button. The default setting is **OFF**.

3.10 Global

This menu contains two functions which can be set to either a yes or no type of operation. These functions are: **List**, and **Reset.** The default settings are **NO**. Global List is a convienent method of examining which parameters are set up in the Indicator. The parameters do not show up on the display but print out when selected. The Global menu contains the List function. When Version is selected, the software revision of the Indicator is displayed.

Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ◄ or ► button until GLOBAL is displayed.
- Press **Enter** button to continue.
- Press ◄ or ► button until either LIST, RESET, VERSION, LOCK or EXIT is displayed.
- Press **Enter** button to continue.
- Press ▲ or ▼ button and select either YES or NO for LIST and RESET. When either LOCK or EXIT is selected, ON or OFF settings are available..
- Press **Enter** button to save setting.
- Press ◄ or ► button to select next item or **EXIT**.
- Press **Enter** button to save.

3.10 Global (Cont.)

List

This submenu can be used to output a listing of current menu settings via the RS232 interface. When YES is selected, all menu settings will be output either to an external printer or computer. To use this feature, your Indicator must be connected to a computer or printer. The default setting is **OFF**.

SAMPLE PRINTOUTS

```
CD-31\CD-33
xxxxxxxxx
Time= 12hr       03:19:51  PM
Date=  m/d/y      12/01/99
Function = Weigh

ReadOut  Menu
     Stb= .5d
     AZT= .5 d
     Filter= 1
GMP Menu
     Time/Date= On
     Scale  Id= On
     User  No.= On
     Proj  No.= On
     DIFF=  On
     Name=  On
Print Menu
     Auto Print=  On Stb.
     Interval=  1
     Stable Print=  On
     NU=  On
     GMP Cont =  On
     GMP on Tare =  On
     Print Ref=  On
RS232 = 2400: N
```

The partial sample shown, indicates the status in the menus.

```
  LFT  is Off
  Mode  Menu
    WEIGH= On
    PERCENT= On
    COUNT=  On
    ANIMAL=  On
    CHECKWEIGH = On
    EXP WGT= Off
  Lock Switch is Off
  Menu  Locks
    RS232=  Off
    READOUT=  Off
    GMPSET=  Off
    MODE=  Off
    UNITS=  Off
    PRINT= Off
    GMP Data = Off
    CAL=  Off
    GLOBAL= Off
    CUSTOM= Off
    SCALE=Off
  Enabled  Units:
    g
    kg
    custm
  C. Units:
    1.000000
```

Reset

Reset when set to YES will reset the Indicator to factory default settings. The default setting is **NO**.

Version

Displays software revision number for servicing purposes. This number is installed with the Indicator.

Lock

Lock when selected and set to ON, locks all of the entries made under the Global menu. The default setting is **OFF**.

3.11 Custom Unit

Custom Unit is enabled when Custom Unit Setup under Units Menu is turned ON. This feature can be used to create your own custom weighing unit. It permits entering a conversion factor which the scale will use to convert kg to the desired unit of measure.

Conversion Factor x *Weight in kg* = *Weight in custom unit*

Conversion factors are expressed in scientific notation and entered into the balance in three parts:

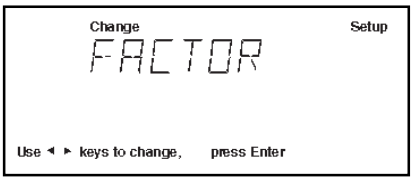
- a number between 0.1 and 1.999999 called the mantissa
- a power of 10 called the exponent
- a least significant digit (LSD).

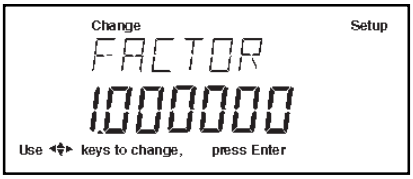
SCIENTIFIC NOTATION

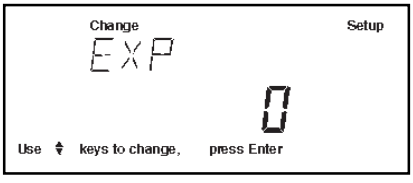
Conv. Factor		Number Between 0.1 and 1.999999		Power of 10		Mantissa	Exp.
123.4	=	.1234	x	1000	=	.1234 x	10^3
12.34	=	.1234	x	100	=	.1234 x	10^2
1.234	=	.1234	x	10	=	.1234 x	10^1
.1234	=	.1234	x	1	=	.1234 x	10^0
.01234	=	.1234	x	.1	=	.1234 x	10^{-1}
.001234	=	.1234	x	.01	=	.1234 x	10^{-2}
.000123	=	.123	x	.001	=	.123 x	10^{-3}

EXPONENTS

E-3	Moves decimal point 3 places to the left.
E-2	Moves decimal point 2 places to the left.
E-1	Moves decimal point 1 place to the left.
E0	**Leaves decimal point in normal position.**
E1	Moves decimal point 1 place to the right.
E2	Moves decimal point 2 places to the right.
E3	Moves decimal point 3 places to the right.



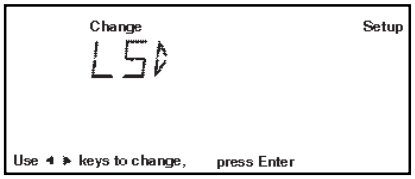


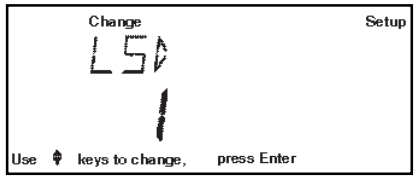


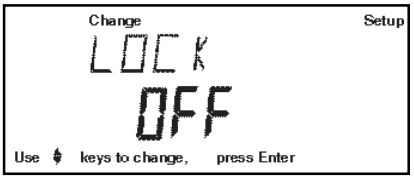
Procedure

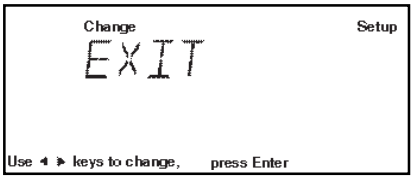
- Press the **Setup** button, Scale is displayed.
- Press ◄ or ► button until CUSTOM is displayed.
- Press **Enter** button to save setting, FACTOR is displayed.
- Press **Enter** button, the mantissa of the current conversion factor is displayed. This is a number between 0.1 and 1.999999 with the first digit flashing. For conversion factors outside of this range, the exponent will be used to move the decimal point.
- Press ◄ ► or ▲ ▼ buttons or numerical keypad and enter a 7 digit number for the conversion factor.
- Press **Enter** button, EXP (exponent) is displayed.
- Press **Enter** button, 0 (exponent) is displayed.
- Press ▲ or ▼ button and select exponent value either -3, -2, -1, 0, 1, 2, or 3.

3.11 Custom Unit (Cont.)







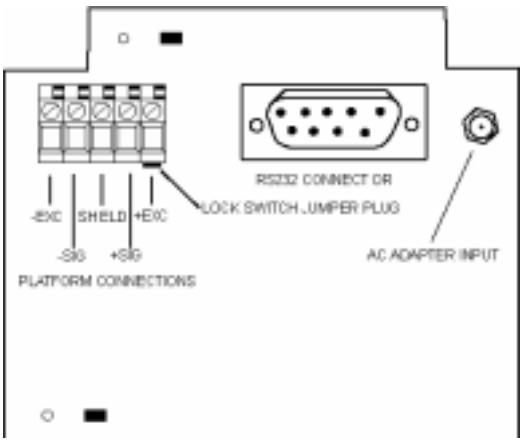


3.12 Menu Lock-Out Protection

Access to the various menus can be disabled by inserting the Lock Switch jumper located on the bottom of the Indicator underneath the Terminal Block. See figure for location. The Lock Switch jumper when removed, locks out all menus which have had LOCK turned ON. The default setting for the Lock Switch jumper is OFF (jumper on).

Type Approved/Legal for Trade Indicator Sealing

All CD-31 and CD-33 Indicators may be sealed for type approved/legal for trade applications. A sealing kit is provided with the Indicator. The kit includes a lead seal with wire, screws and cover as shown.



Indicator Connection Compartment Open

Procedure (Cont.)

- Press **Enter** button, SAVED is momementary displayed followed by LSD. There are 6 LSD (least significant settings you can choose from (see table).

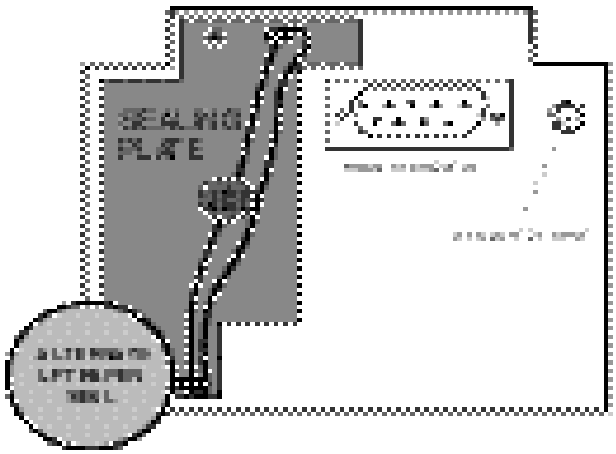
LSD's	
LSD .5	Adds one decimal place display counts by 5's.
LSD 1	**Display counts by 1's.**
LSD 2	Display counts by 2's.
LSD 5	Display counts by 5's.
LSD 10	Display counts by 10's.
LSD 100	Display counts by 100's.

- Press **Enter** button, LSD 1 is displayed.
- Press ▲ or ▼ button and select LSD value.
- Press **Enter** button, LOCK is displayed.
- Press **Enter** button, LOCK OFF is displayed.
- Press ▲ or ▼ button and select ON or OFF.
- Press **Enter** button, EXIT is displayed.
- Press **Enter** button, Indicator returns to weigh mode.

For type approved Indicators, consult local Weights and Measures officials to determine sealing method requirements.

After the Indicator has been **set up properly, calibrated** and the **menus are locked out** (refer to paragraph 4.1 Calibration), proceed to seal the indicator.

For a lead and wire seal, place the sealing plate into position and run sealing wire through holes in plastic retainers. Run wire through lead seal and crimp closed as shown. Alternate LFT paper seal should be positioned half on the sealing plate and half on the plastic cover.



Indicator Connection Compartment Sealed

4. OPERATING YOUR INDICATOR

4.1 Calibration

Model CD-31 and CD-33 Indicators offer a choice of four calibration methods: **Span**, **User**, **Linearity**, and **CalTest**™.

- ***Span*** - Span calibration ensures that the Indicator reads correctly within specifications using a weight value of 100% of capacity.
- ***User*** - User calibration is a method where the Indicator can be calibrated using a mass between 10% and 100% of capacity and by entering that numeric value into the Indicator.
- ***Linearity*** - Linearity calibration minimizes deviation between actual and displayed weights within the Indicator's weighing range. Three weight values are used: zero, a weight value at or near midpoint and full scale.
- ***Cal Test*** - User may enter calibration test point by entering that numeric value into the Indicator.. The difference in weight is indicated.
- ***Lock*** - Can be set on or off. When set on, Span, User and Linearity are locked out and cannot be used.

Calibration Menu Protection

NOTES:
• Calibration may be locked out to prevent unauthorized personnel from changing calibration. If calibration has been locked out, you can only access Cal Test.

• To lock out calibration menu, after calibration, refer to the section titled paragraph 3.12, Menu Lock-Out Protection.

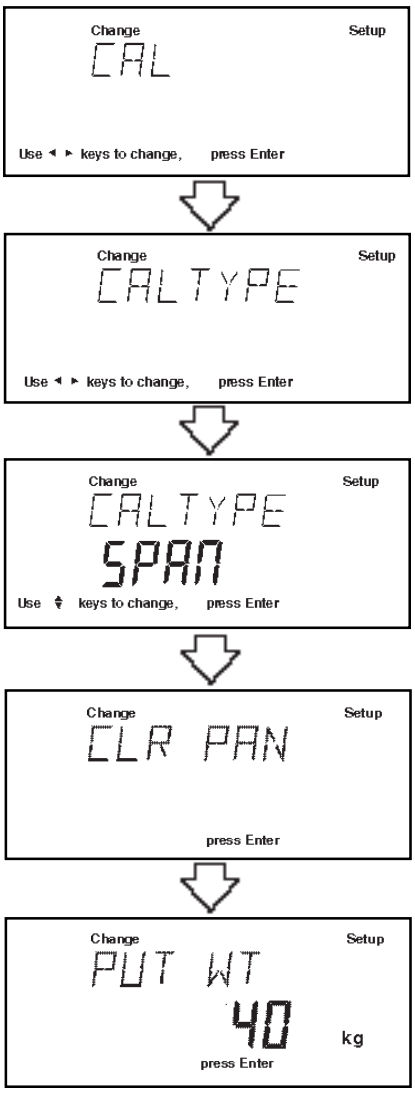
Calibration Masses

Before beginning calibration, make sure masses are available. If you begin calibration and realize calibration masses are not available, exit the menu. The Indicator will retain previously stored calibration data. Calibration should be performed as necessary to ensure accurate weighing. Masses required to perform the procedures should be in compliance with the requirements of the scale base being used with the Indicator.

NOTE:
Any of the calibration modes can be terminated *at any time* by pressing either the **Mode**, **Units** or **Setup** buttons.

4.1.1 Span Calibration

Span calibration requires a mass equal to 100% of the scale base capacity.

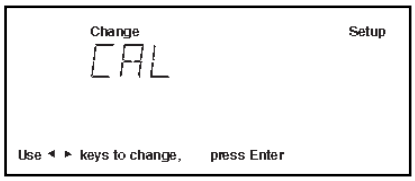


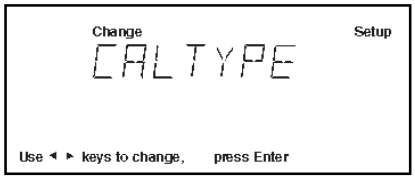
Procedure

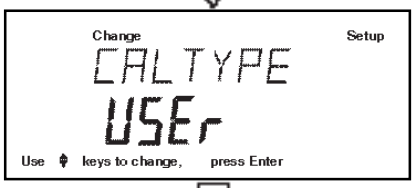
- Press the **Setup** button, SCALE is displayed.
- Press ► button until CAL is displayed.
- Press **Enter** button, CAL TYPE is displayed.
- Press **Enter** button, CAL TYPE SPAN is displayed.
- Press **Enter** button, CLR PAN is displayed. Clear the pan.
- Press **Enter** button, WORKING is momentarily displayed, then PUT WT is displayed (capacity of base) on the pan.
- Place specified calibration mass on pan. The illustration sample indicates 40 kilograms.
- Press **Enter** button, WORKING is displayed. After a few seconds CAL SET is displayed; the display then returns to WEIGH mode.
- Span calibration is completed.
- Remove calibration mass from the pan.

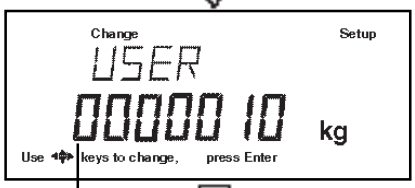
4.1.2 User Calibration

User calibration is used when it is desired to calibrate the Indicator using a mass of known value from 10% to 100% of the capacity of the scale base. To use this calibration feature, proceed as follows:

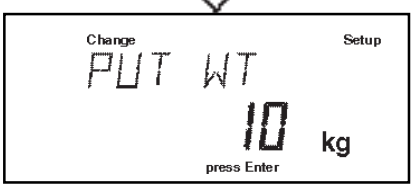








(FLASHING)

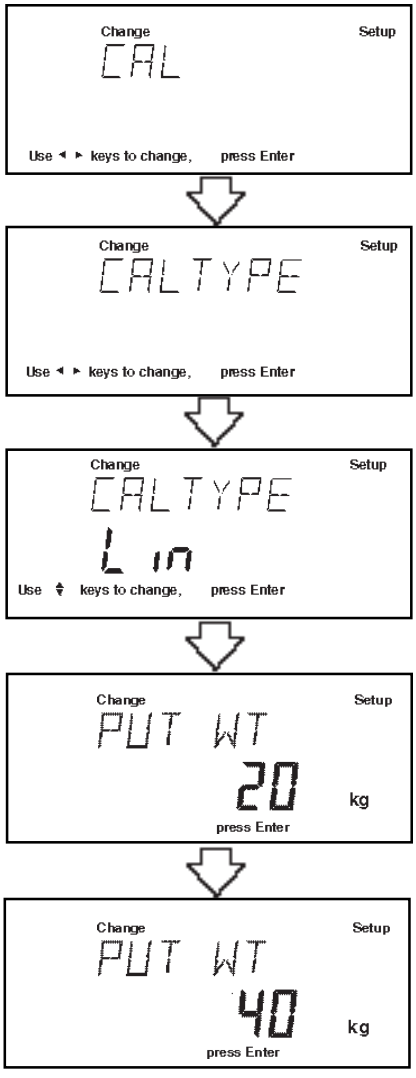


Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ► button UNTIL CAL is displayed.
- Press **Enter** button, CAL TYPE is displayed.
- Press **Enter** button, SPAN is displayed.
- Press ▲ button to select user calibration. CAL TYPE USEr is displayed.
- Press **Enter** button; the display indicates the last calibration mass value which was entered with the first digit flashing. (Sample illustrates 10kg).
- Press ▲ ▼ and or ◄ ► and enter the desired mass value when using Model CD-31. The numerical keypad can be used for Model CD-33. This number must be at least 10% of the full span value.
- Press **Enter** button, CLR PAN is displayed.
- Press **Enter** button,WORKING is momentarily displayed, then PUT WT 10 kg is displayed.
- Place specified calibration mass on pan.
- Press **Enter** button, WORKING is displayed. After a few seconds CAL SET is displayed, the display then returns to WEIGH mode and indicates mass on pan.
- Remove calibration mass from the pan.
- User calibration is completed.

4.1.3 Linearity Calibration

Linearity calibration utilizes three calibration points; one at zero, center span and full span. This method minimizes deviation between actual and displayed weights within the Indicator's weighing range. Three weight values are used; zero, a weight value at or near midpoint of the Indicator's weighing range and a weight value at specified capacity. Sample display illustrates a 40 kg scale base.

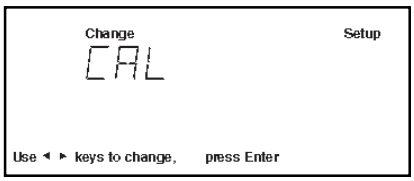


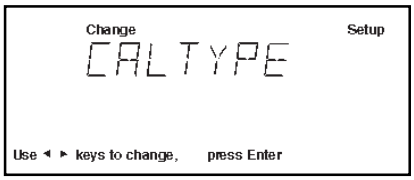
Procedure

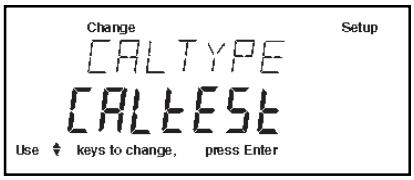
- Press the **Setup** button, SCALE is displayed.
- Press ► button UNTIL CAL is displayed.
- Press **Enter** button, CAL TYPE is displayed.
- Press **Enter** button, SPAN is displayed.
- Press ▲ button to select linear calibration. CAL TYPE Lin is displayed.
- Press **Enter** button, CLR PAN is displayed.
- Press **Enter** button, WORKING is momentarily displayed, then PUT WT 20kg is displayed.
- Place specified calibration mass on pan.
- Press **Enter** button, WORKING is displayed. After a few seconds, display changes to PUT WT 40kg. The displayed weight is the full capacity of the Indicator.
- Place specified calibration mass on pan.
- Press **Enter** button, WORKING, is displayed. After a few seconds, CAL SET is displayed; the display then returns to WEIGH mode and indicates mass on pan.
- Remove calibration mass from the pan.
- Linearity calibration is completed.

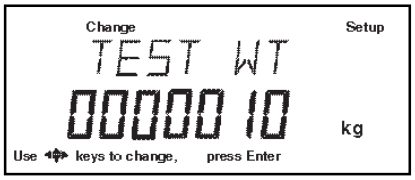
4.1.4 Calibration Test

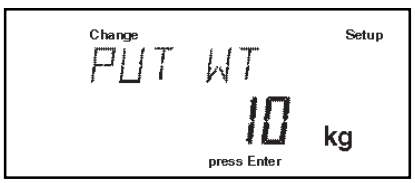
Calibration test feature allows a check of a known calibration mass against the last stored calibration information in the indicator. Sample display illustrates a 40 kg scale base using a 10kg mass.

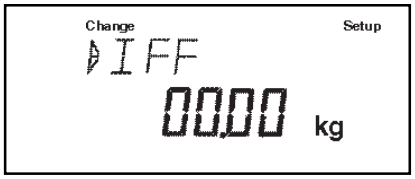












Procedure

- Press the **Setup** button, SCALE is displayed.
- Press ► button UNTIL CAL is displayed.
- Press **Enter** button, CAL TYPE is displayed.
- Press **Enter** button, SPAN is displayed.
- Press ▲ button to select calibration test,CAL TYPE CALtESt is displayed.
- Press **Enter** button, TEST WT is displayed and the last calibration mass value which was entered with the first digit flashing. (Sample illustrates 10kg).
- Press ▲ ▼ and or ◄ ► and enter the desired mass value when using Model CD-31. The numerical keypad can be used for Model CD-33. This number must be at least 10% of the full span value.
- Press **Enter** button, CLR PAN is displayed.
- Press **Enter** button,WORKING is momentarily displayed, then PUT WT 10 kg is displayed.
- Place specified calibration mass on pan.
- Press **Enter** button, WORKING is displayed. After a few seconds, WEIGH DIFF is displayed.The display now indicates the actual difference in weight between the previous weight value which was stored in the Indicator. After approximately 8 seconds, the display returns to the WEIGH mode and indicates the weight on the pan.
- Remove calibration mass from the pan.

4.1.5 Calibration GMP Printout

If any option in the GMP Set Menu is turned On, GMP automatically prints data after calibration is completed.

Span Calibration Printout

When performing Span calibration with all GMP options turned on, a printout is automatically made after the calibration is completed.

```
- - - - - SPAN CAL - - - - - -
12/01/99     1:10:00 PM
Scale Id  1234
Cal:              40kg
Old:              39.99kg
Dif:              0.01kg
Wt.
Ref.....
USER NO 2056853
PROJ NO 100012
Name.....

- - - - - END - - - - -
```

Linearity Calibration Printout

When performing a Linearity calibration with all GMP options turned on, a printout is automatically made after the calibration is completed.

```
- - - - - LIN CAL - - - - - -
12/01/99     1:20:00 PM
Scale Id  1234
Cal:              40kg
Old:              39.99kg
Dif:               0.01kg
Wt.
Ref.....
USER NO 2056853
PROJ NO 100012
Name.....

- - - - - END - - - - -
```

Calibration Test Printout

When performing a Calibration Test with all GMP options turned on, a printout is automatically made after the calibration is completed.

```
- - - - - CAL TEST - - - - - -
12/01/99     1:30:00 PM
Scale Id  1234
Cal:              10kg
Act:              10kg
Dif:               0.00kg
Wt.
Ref.....
USER NO 2056853
PROJ NO 100012
Name.....

- - - - - END - - - - -
```

4.2 Weighing

The Indicator is shipped with kilograms only enabled. When the Indicator is to be used with other Type Approved/Legal for Trade units of measure, the desired unit must be enabled. Refer to paragraph 3.9 to enable other measuring units.

The Indicator is equipped with a **G/N/T** button which allows the viewing of gross weight, net weight and tare weight. A **Tare** button allows taring the weight of container, and a separate **>0<** zero button, zero's the Indicator display reading.

Weighing Procedure

- Press **>0<** to rezero the display.
- Press **Units** button to select measuring unit. If an error code appears, refer to paragraph 5.2.
- Press ◄ or ► button for desired measuring unit.
- Press **Enter** button, Indicator is now ready for weighing.
- Press **>0<** to rezero the display.
- Place the object(s) or material to be weighed on the pan. Example illustrates a 2kg weight.
- Wait for the Stable indicator to appear before reading the weight.

4.2.1 Manual Taring

When weighing material or objects that must be held in a container, manual taring stores the container weight in the Indicator's memory, separate from the weight of the material in the container.

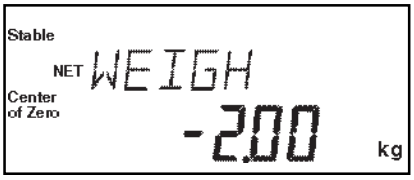
When a container has been placed on the pan and tared, its weight is stored in memory. Adding material to the container is shown as NET weight. The gross weight is a combination of the tared weight and the material. The G/N/T button allows switching between GROSS, NET and TARE weights.

Procedure

- Press **>0<** button with no load on the pan to set the Indicator reading to zero.
- Place an empty container on the pan. Its B/G weight is displayed.
- Press the **Tare** button, display blinks until stable weight readings are received, then indicates NET WEIGH 0.00. The container's weight is stored in memory.
- Add material to the container. As material is added, its net weight is displayed.
- Removing the container and material from the pan will cause the Indicator to display the container's weight as a negative number. The tared weight will remain in memory until the **Tare** button is pressed again or the Indicator is turned off.
- Pressing **Tare** clears tare from memory.

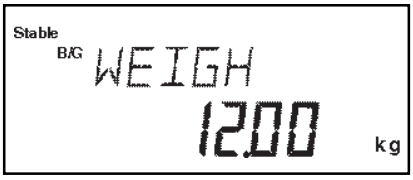
4.2.2 Preset Taring

Preset taring is used to enter a tared weight via the numerical keypad. If a container's weight is known, the Indicator may be preset using the numerical keypad to enter the weight. When using this feature, a time constraint of 4 seconds is imposed to start entering data, otherwise the Indicator defaults back to a weighing mode.

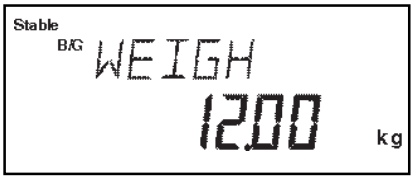


Tare weight

Net weigh - container tared



Container with material



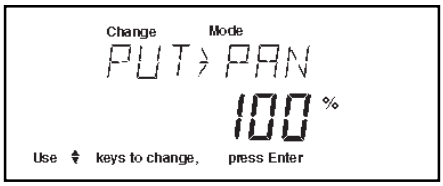
Gross weight material and container

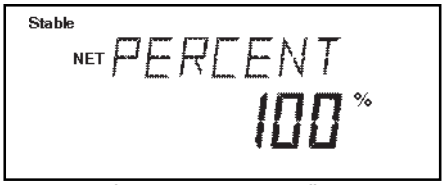
Procedure

- Press **>0<** button with no load on the pan to set the Indicator reading to zero.
- Press the number 0 on the numeric keypad, the display indicates P>TARE 00000.00 kg with the second digit blinking. Using the keypad, enter the desired tare weight. Remember the weight is either in pounds or kilograms whatever was set previously. If the number is not entered, the display indicates an ERROR CODE 2.1; this is normal. The Indicator returns to a weighing mode automatically. If entered correctly, the tare weight is stored in the Indicator.
- Press **Enter** button, Indicator is now ready for weighing. The display indicates NET WEIGH and the amount of tare weight as a negative number. The illustration indicates a 2kg weight. The next two steps are for an empty container and a full container.
- Place the empty container on the pan. If the weight entered was correct, the display indicates 0.00 kg. Material may be added to the container, the display indicates the net weight.
- Place a container with material on the pan. The display indicates NET WEIGH of the material only. The weight of the container which was entered is automatically subtracted. Illustration indicates a 10kg of material in a 2kg container.
- Each press of the **G/N/T** button will advance the display to NET WEIGH (net weight), B/G WEIGH (gross weight) which includes the container's weight, and PT WEIGH (preset tare weight of the container). The tare weight remains in memory until the **Tare** button is pressed or the Indicator is unpluged from the power source.
- Pressing **Tare** clears tare from memory.

4.3 Percent Weighing

Percent Weighing is ***enabled only*** when Percent is turned ON in the Mode submenu under Setup. Percent weighing permits you to place a reference load on the pan; then view other loads as a percentage of the reference. The load you place on the pan as a reference may be displayed as any percentage you select from 5% to 100% (in 1% increments). 100% does not necessarily have to represent the reference load. Subsequent loads, displayed as a percentage of the reference are limited only by the capacity of the scale base. The default setting is Reference 100%. Refer to paragraph 3.8 to enable percent weighing.





(Tare was entered)

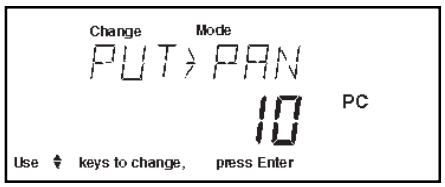
Procedure

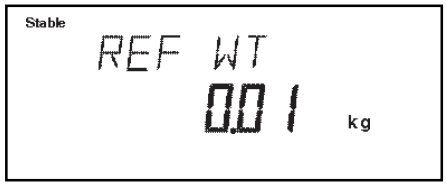
- Press the **Mode** button, WEIGH is displayed.
- Press ◄ or ► button until PERCENT is displayed.
- Press **Enter** button, PUT>PAN 100% or whatever was set last time is displayed. If a container is used, the Indicator can be tared at this point. The % display momentarily blanks while the Indicator is taring out.
- Put the reference load on the pan.
- Press ▲ or ▼ button and select reference weight percentage (Percent Range 5 to 100). Hold button down for fast change.
- Press **Enter** button to save setting, WORKING is displayed ... calculating reference weight. Indicator displays reference weight for 5 seconds in selected measuring unit, then displays the percentage.
- Remove the reference weight from the pan and replace it with another load. The second load is displayed as a percentage of the reference. Container can be tared anytime during operation: container on scale, press **Tare** button. When Tare was entered, display always shows NET weight (G/N/T button disabled).

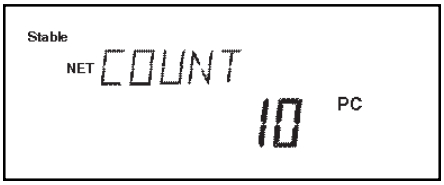
NOTE: The PERCENT display (number of digits) is a function of the accuracy of the Indicator and the size of the reference weight. The display examples were with a 2kg mass used with an 40kg scale base.

4.4 Parts Counting

Parts Counting is ***enabled only*** when Count is turned ON in the Mode submenu under Setup and selected with the **Mode** button. In the parts counting mode, the Indicator displays the quantity of parts you place on the pan. Since the Indicator determines the quantity based on the average weight of a single part, all parts must be reasonably uniform in weight.







(Tare was entered)

Procedure

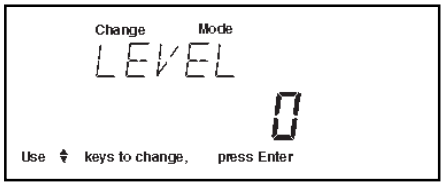
- Press the **Mode** button.
- Press ◄ or ► button until COUNT is displayed.
- Press **Enter** button to save setting, PUT>PAN 10 PC is displayed (default setting), Indicator will retain last sample size saved.
- Press **Tare** if taring is required. Container can be tared anytime during operation; container on scale, press **Tare** button. When Tare was entered, display always shows NET weight (G/N/T button disabled).
- Press ▲ or ▼ button and select sample size. Sample size is 5 to 1000 pieces.
- Place sample size on the pan.
- Press **Enter** button to continue, display indicates WORKING.

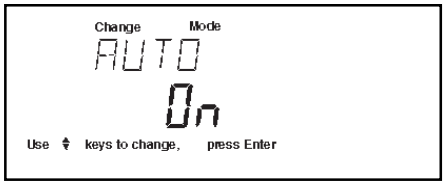
Indicator displays the reference weight of an individual piece part for 5 seconds and then displays the total number of pieces on the pan.

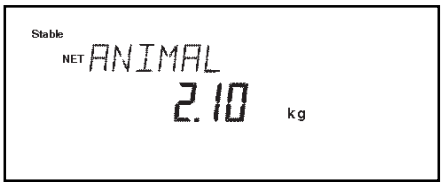
- Remove the sample and place parts to be counted on the pan. Indicator displays number of pieces.
- To return to weighing mode, press **MODE** button, COUNT is displayed.
- Press ◄ button until WEIGH is displayed, then press **Enter** button. Indicator is now in a weighing mode.

4.5 Animal Weighing

Animal Weighing is ***enabled only*** when Animal is turned ON in the Mode submenu under Setup.







Procedure

- Press the **Mode** button, WEIGH is displayed.
- Press ◄ or ► button until ANIMAL is displayed.
- Press **Enter** button to continue, LEVEL is displayed.
- Press ▲ or ▼ button to change animal weighing level, 0, 1, 2 or 3. 0 level represents an inactive subject, 3 is used for a very active subject.
- Press **Enter** button to continue, AUTO is displayed.
- Press ▲ or ▼ button to select AUTO ON or OFF.
- Press **Enter** button to continue.

When the AUTO function is set ON, different subjects can be weighed one after another without pressing any buttons. When the Indicator displays READY, simply place subject on pan.

Starting Animal Cycle

- Place animal container if used on pan.
- Press **Tare** to tare the container. Note: preset tare also can be used.
- Place subject on pan.
- The animal cycle will automatically start if AUTO was set to ON.
- Press **Enter** button to start animal cycle if AUTO was set to OFF.

During Animal Cycle

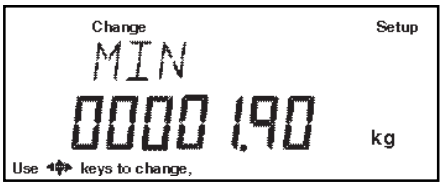
- Display shows countdown to AM0.

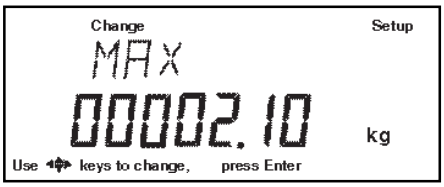
Completed Animal Cycle

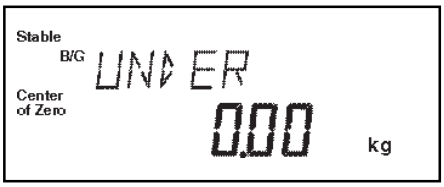
- Indicator displays weight until subject is removed from the pan. Display returns to ANIMAL READY if Indicator was set to AUTO.
- To return to weighing mode, press **MODE** button, ANIMAL is displayed.
- Press ◄ button until WEIGH is displayed, then press **Enter** button. Indicator in now in a weighing mode.

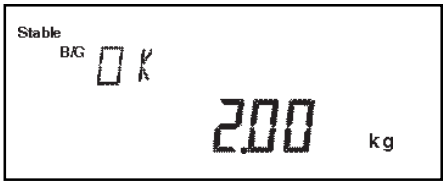
4.6 Checkweigh

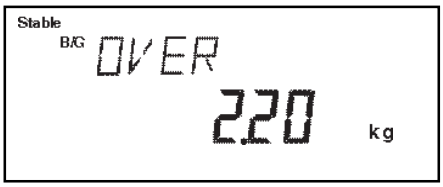
Checkweigh is ***enabled only*** when Checkweigh is turned ON in the Mode submenu under setup. Checkweigh permits entering a minimum weight value and a maximum weight value though the numerical keypad or arrow buttons. You can establish minimum and maximum values for repeitive weighing of identical objects. This is suited for production where a large number of items have to be checked against preset parameters.









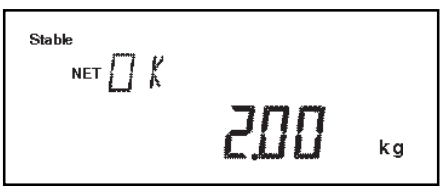


Procedure

- Press the **Mode** button, WEIGH is displayed.
- Press ◄ or ► button until CHECK W is displayed.
- Press **Enter** button to continue, MIN 0000000 is displayed with the first digit blinking.
- Using the numerical keypad or arrow buttons, enter the minimum acceptable weight for the item being checked. Sample illustrates 1.90kg.
- Press **Enter** button to continue, the display indicates MAX 0000000 with the first digit blinking.

NOTE: Weights are not accepted unless entered as a multiple of display increment.

- Using the numerical keypad or arrow buttons, enter the maximum acceptable weight for the item being checked. Sample illustrates 2.10kg
- Press **Enter** button to continue, UNDER is displayed with no object on the pan. Place the item to be checked on the pan. If the item is within the tolerance you set, the display indicates OK with the weight of the item. If the item is over weight, the display indicates OVER with the weight displayed.
- To check similiar items, simply remove the first item and place another item on the pan to check. It is not neccessary to press any buttons to check additional items. Container can be tared anytime during operation: container on scale, press **Tare** button. When Tare was entered, display always shows NET weight (G/N/T button disabled).
- To return to weighing mode, press **MODE** button, CHECK W is displayed.
- Press ◄ button until WEIGH is displayed, then press **Enter** button. Indicator in now in a weighing mode.



(Tare was entered)

4.7 Printing Data

Printing data to an external computer or printer requires that the communications parameters in the Setup menu, Print options and communication parameters be set first. Refer to paragraph 3 Setting Up Your Indicator. When time, date, GMP Data, Print and RS232 data is set, the printout data will reflect whatever parameters are turned on.

Procedure

- Press the **Print** button. Printing to an external printer or computer will occur each time the **Print** button is pressed. If the autoprint feature is turned on, printing can occur in a continuous fashion, at specified intervals or each time a stable reading is achieved.

Sample printout is shown below with time, date and GMP data turned on and a weight of 2.0kg.

SAMPLE PRINTOUT

```
12/01/99      12:01:37 PM
Bal     Id 0000001
USER   NO 0000020
PROJ    NO 0000010

Name.....................

2.00
```

Printouts are controlled by the GMP Set Menu and the selection of GMP Cont. or GMP Tare in the Print Menu.

4.7.1 RS232 Commands

All communication is accomplished using standard ASCII format. Characters shown in the following table are acknowledged by the Indicator. Invalid command response "ES" error indicates the Indicator has not recognized the command. Commands sent to the Indicator must be terminated with a carriage return (CR) or carriage return-line line feed (CRLF). Data output by the Indicator is always terminated with a carriage return - line feed (CRLF).

4.7.2 Output Formats

Data output can be initiated in one of three ways: 1) By pressing PRINT; 2) Using the Auto Print feature; 3) Sending a print command (“P”) from a computer.

The output format is illustrated in the RS232 command table which follows.

4.7 Printing Data (Cont.)
4.7.2 Output Formats (Cont.)

RS232 COMMAND TABLE

Command Character	Description
?	Print current mode: g, kg, custm, %, #
nnnA	Set Auto Print feature to "nnnn". nnnn=0 Turns feature OFF nnnn=S Output on stability nnnn=C Output is continuous nnnn=1-3600 Sets Auto Print interval
C	Begin span calibration.
F	Print current function.
xI	Set Averaging Filter to "x", where x = 0 to 3. If LFT, level 0 to 1. 0=minimum level 1= 2= 3= maximum level
L	Begin linearity calibration.
xM	Places terminal in mode "x", where x = 1 to 4. If unit is not already enabled, command returns ES. 1=grams 2=kilograms 3= pounds 4= custom units
P	Print display data.
xSL	Set stable data only printing TO "X", where x = 0 to 3. If LFT, x=0 or 1. 0=.5d 1= 1d 2= 2d 3=5d
T	Same effect as pressing Tare Key.
N	Shows copyright notice.
V	Print software version number.
EscV	Print scale ID
xZ	Set Auto Zero to "x", where x=0 to 3. If LFT, Auto Zero level from 0 to 1. 0=off 1=0.5d 2=1d 3=3d
x%	Set % reference weight. Uses real number "x" as current Percent Reference Weight. Weight must be entered in Calibration Units.
x#	Set PC reference weight. Uses real number "x" as current Parts reference Weight. Weight must be entered in Calibration Units.
EscR	Resets setup and print menus to factory defaults. CAUTION: This will reset RS232 configuration.
#	Print current Parts Count Reference Weight in the most recently used Units.
%	Print current Percent Reference Weight in the most recently used Units.
xF	Set current function to "x", where x=0 to 4. If mode is not already enabled, command returns ES. 0=None (normal weigh)

4.7 Printing Data (Cont.)
4.7.2 Output Formats (Cont.)

RS232 COMMAND TABLE

Command Character	Description
	1=percent 2=parts counting 3=animal weighing 4= checkweigh
xAW	Set Animal Level to "x", where x= 0 to 3. 0= minimum filtering 1= 2= 3= maximum filtering
xE	Turn Auto restart in Animal mode on or off. Where x=0 is off and x=1 is on.
xT	Set tare weight. Uses real number "x" as current tare weight. Weight must be entered in Calibration Units.
ID	Print Current User ID String.
xID	Program User ID String, 1-8 characters.
AC	Abort Calibration.
xUC	Start User Calibration. Uses integer number "x" as calibration weight.
LE	Show last error code. Response: "Err: x.x".
xS	Turn Print Stable Only on or off. Where x=0 is off and x=1 is on.
TIME	Print current time. Note, a "?" will follow if time has not been set.
mm/dd/yy SETDATE	Set date command and remove invalid date indicator.
hh:mm:ss SETTIME	Set time command and remove invalid time indicator. Time must be entered in 24 hr. format
DATE	Print current date. Note, a "?" will follow if date has not been set.
SW	Shows Lockswitch status.
Z	Same effect as pressing ">0<" Key.
NG	Same effect as pressing the "G/N/T" Key. Cycles through Net, Gross, and tare displays if possible.
EscM	To print out a list of the scale selections.
E	Will start animal cycle when in animal weighing mode.

5 CARE AND MAINTENANCE

To keep the Indicator operating properly, it should be kept clean and free from foreign material. If necessary, a cloth dampened with a mild detergent may be used.

5.1 Troubleshooting

SYMPTOM	PROBABLE CAUSE(S)	REMEDY
Unit will not turn on.	Power cord not plugged in or properly connected to Indicator.	Check power cord connections.
Incorrect weight reading.	Indicator was not re-zeroed before weighing. Indicator not properly calibrated.	Press >0< with no weight on the pan, then weigh item. Recalibrate correctly.
Cannot display weight in desired unit.	Desired unit not enabled.	Enable units in Setup menu. Press Units button until desired measuring unit is shown.
Unable to store menu settings/ changes.	Enter was not selected. Menu locked.	Press Enter when prompted. Menu not locked properly.
RS232 interface not working.	Print menu settings not properly set up. Loose or improper cable connections.	Verify interface settings in RS232 menu correspond to those of peripheral device. Check cable connections.
Random segments displayed or display locks up.	Microprocessor locks up.	Unplug from the wall outlet and plug in. If condition persists, unit must be serviced.
Unstable readings.	Excessive air currents. Vibration on platform surface.	Check environmental conditions. Place scale base on a stable surface or change averaging level.
Error message display.	———	See Error Codes list.
Cannot access weighing mode.	Desired weighing mode is not enabled.	Enable weighing mode. Press mode until desired weighing mode is displayed.

5.2 Error Codes List

Error Codes List

The following list describes the various error codes and which can appear on the display and the suggested remedy.

Tare Errors

2.0 Tare timeout - Indicator unstable during tare attempt.
2.1 Preset tare timeout - (more than 4 seconds between key presses).
2.2 Zero timeout - Indicator unstable during zero attempt.

Calibration Errors

3.0 Improper or missing mass used for calibration. Recalibrate with correct masses.

User Errors

4.4 RS232 buffer full.
5.1 Scale settings below minimum resolution. (Full Scale/Graduations < 500).
5.2 Too many divisions allowed w/current Grad and Full Scale settings. Increase Grad size, reduce capacity, or recalibrate.
5.3 Unit switching error - cannot display weight in selected unit based on current settings for Cal Unit or grad. See chart for legal display units.
7.0 User entry out of bounds. -- value entered for Hour, Minute, Month, or Day is out of range.
7.1 Factor entered for Custom Units <0.1 or > 1.999999.
7.2 Number outside of display capacity.
7.3 Value entered for preset tare is > Full Scale, or is not a multiple of the display increment (see chart below).
7.4 Value entered for Full Scale is > 1999999 or =0.
7.5 Value entered for User Calibration or Calibration Test Weight is > Full Scale or < 10% of Full Scale.
7.6 Value entered for Print Interval is < 1 or > 3600 seconds.
7.7 Value entered for Check Weigh point is > Full Scale, = 0 or is not a multiple of the display increment (Grad).
7.8 Value entered for minimum Check Weigh point > maximum Check Weigh point.

Over-Under Load Errors

8.2 Power-on zero out of range. Weight on scale base greater > zero (2%, 18%, 100%) during power up).
8.3 Capacity exceeded. (weight on pan > Full Scale + display increments).
8.4 Underload condition on scale base (weight on pan < -5 display increments).

CheckSum Errors

9.1 Bad factory checksum. If error persists, have the Indicator serviced.
9.8 User calibration data failed checksum.

5.3 Service Information

If the Troubleshooting section does not resolve or describe your problem, you will need to contact an authorized Ohaus Service Agent. For Service assistance in the United States, please call Aftermarket, Ohaus Corporation toll-free at (800) 526-0659. An Ohaus Product Service Specialist will be available to help you.

5.4 Replacement parts

Description	Ohaus Part No.
AC Adapter North America, 100-132 V ac, 60 Hz	80500435
AC Adapter Continental Europe, 196-253 V ac, 50 Hz	80500436
AC Adapter UK, 196-264 V ac, 50 Hz	80500437

This product is intended to be supplied by a UL Listed Direct-Plug-In Power unit marked "Class 2" and rated 9V dc, 500mA.

5.5 Accessories

Description	Ohaus Part No.
Adjustable Column	80250632
Wall Mounting Bracket	80250633
Scale Base Mounting Plate	80250634
RS232 Interface Cable/Printer	80500432
RS232 Interface Cable/PC 25 Pin	80500431
RS232 Interface Cable/PC 9 Pin	80500433
Printer	AS142

5.6 Technical Data

Standard Equipment of CD-31 and CD-33 Indicators

- Indicator power input 9 V dc, 0.5 A

Materials

- Housing GE C6200 Cycoloy plastic.
- Keypad/display overlay polyester

Protection

- Not protected against dust and water.
- Installation category: Class III

Ambient conditions

The technical data are valid under the following ambient conditions:

- Operating temperature -10°C to 45°C/14°F to113°F
- Storage temperature -40°C to 70°C/-40°F to158°F
- Relative humidity 10%.....95%, noncondensing
- Height above sea level up to 4000m

MODEL	CD-31	CD-33
Capacity	up to 199,999 (Lb or Kg)	
Graduation lb/kg	0.0005 - 100	
Displayed Resolution	1:10,000 LFT or 1:50,000 (Non LFT)	
Weighing modes	lb, kg, g	
Functions	weighing, parts counting, animal weighing, percent, checkweighing	
Over range capacity	Max capacity + 5 divisions	
Stabilization time	1 to 4 seconds, depends on filter selection	
Auto-zero tracking capture range	OFF, 0.5, 1, or 3 divisions	
Zeroing range	2%, 18%, or 100% of capacity	
Internal resolution	1:400,000	
Span calibration	10 to 100% of capacity	
Load cell excitation voltage	5V dc	
Load cell input sensitivity	2 or 3mV/V	
Load cell drive	4 x 350 ohm cells	
Display	LCD 2 line; weight and prompt message	
Power	AC Adapter only	
Keyboard	12 function keys	12 function + 11 numeric keys
Time and Date	yes	
Overall dimensions (WxDxH) in mm	254 x 19.68 x 7.92	
Net weight	0.65kg	
Shipping weight	0.95kg	

LIMITED WARRANTY

Ohaus products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period, Ohaus will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to Ohaus.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Ohaus. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Corporation. Ohaus Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact Ohaus or your local Ohaus dealer for further details.

Ohaus Corporation
29 Hanover Road,
Florham Park, NJ 07932, USA
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Fax: (973) 593-0359

With offices worldwide.

Ohaus Corporation
29 Hanover Road
Florham Park NJ
07932-0900

OHAUS SCALE BASES

Instruction Manual

This device corresponds to requirements stipulated in 90/384/EEC and features radio interference suppression in compliance with valid EC Regulation 89/336/EEC. Note: The displayed value may be adversely affected under extreme electromagnetic influences, eg. when using a radio unit in the immediate vicinity of the device. Once the interference has been rectified, the product can once again be used for its intended purpose. The device may have to be switched on again.

Cet appareil correspond aux exigences selon la norme 90/384/CEE et est déparasité conformément à la directive de la CE 89/336/CEE en vigueur. Remarque: Dans des conditions d'influences électromagnétiques extrêmes, par exemple en cas d'exploitation d'un appareil radio à proximité immédiate de l'appareil la valeur d'affichage risque d'être influencée. Une fois que l'influence parasite est terminée, le produit peut être de nouveau utilisé de manière conforme aux prescriptions; le cas échéant, il est nécessaire de le remettre en marche.

Dieses Gerät entspricht den Anforderungen nach 90/384/EWG und ist funkentstört entsprechend der geltenden EG-Richtlinie 89/336/EWG. Hinweis: Unter extremen elektromagnetischen Einflüssen z.B. bei Betreiben eines Funkgerätes in unmittelbarer Nähe des Gerätes kann eine Beeinflussung des Anzeigewertes verursacht werden. Nach Ende des Störeinflusses ist das Produkt wieder bestimmungsgemäss benutzbar, ggfs. ist ein Wiedereinschalten erforderlich.

TABLE OF CONTENTS

INTRODUCTION

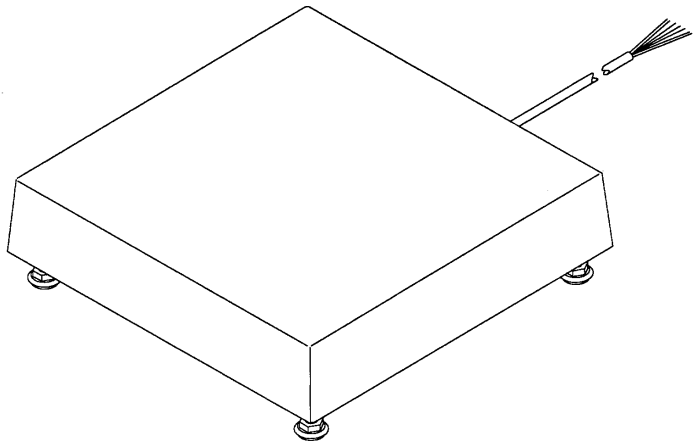
This manual covers installation, maintenance, replacement parts and service information for Ohaus Scale Bases. The following table lists the model numbers and capacities.

PAINTED MODEL	STAINLESS MODEL	ALL STAINLESS MODEL	CAPACITY kg	lb
B10P	B10S	B10AS	10	25
B25P	B25S	B25AS	25	50
B50P	B50S	B50AS	50	100
B100P	B100S	B100AS	100	200
B150P	B150S	B150AS	150	300
B250P	B250S	B250AS	250	500

To ensure proper operation of the Ohaus Scale Base, please read this manual completely.

DESCRIPTION

Ohaus Scale Bases are available in three types of construction and are ruggedly built with overload protection to take the rough handling encountered in an industrial environment, yet remain highly precise. Each type is available with platform sizes of 12" x 12", 18" x 18" and 24" x 24". Models with a P suffix are constructed with steel platforms, painted black. Models with an S suffix have stainless steel platforms. The 12" x 12" frames used on Models with P and S suffixes are painted aluminum. The 18" x 18" and 24" x 24" frames on Models with P and S suffixes are painted steel. Models with an AS suffix are constructed entirely of stainless steel and are suitable for washdown applications. The load cells used in all Ohaus Scale Bases are made of aluminum and are of a single point, bending beam design. These scale bases are designed to interface with Ohaus electronic indicators and work with other compatible indicators as well.



Typical Ohaus Scale Base

UNPACKING

Carefully unpack and remove the Scale Base from the packing material.

CAUTION

Remove the shipping screws located on the top and bottom of the Ohaus Scale Bases. Refer to figures of Scale Bases on page six.

NOTE: It is recommended that you save the packing material and shipping screws. They will be of value when storing and/or transporting the Scale Base.

INSTALLATION

Load Cell Cable Connections to Weight Indicators

The load cell cable must be connected to the terminal block of the indicator. Following the instructions provided with the indicator, wire the load cell cable to the terminal block of the indicator. Refer to the table below.

If the indicator does not have sense capability, connect the +sense wire to the +excitation wire and -sense wire to the -excitation wire.

+ Excitation Green	- Excitation Black
+ Output Red	- Output White
+ Sense Blue	- Sense Brown
Shield Bare or Yellow	

Leveling the Scale Base

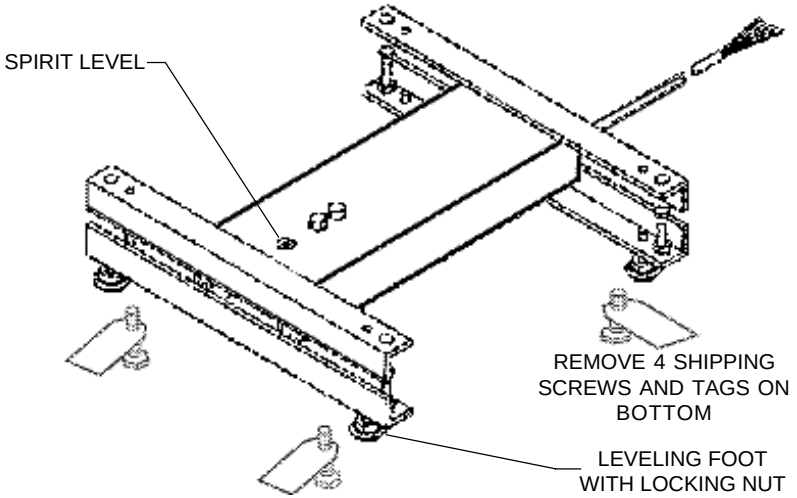
1. Place the Scale Base in the intended use location on a stable, level surface.

2. Remove the Platform from the top of the Scale Base to expose the circular Spirt Level mounted in the top of the frame. See illustrations on page 6.

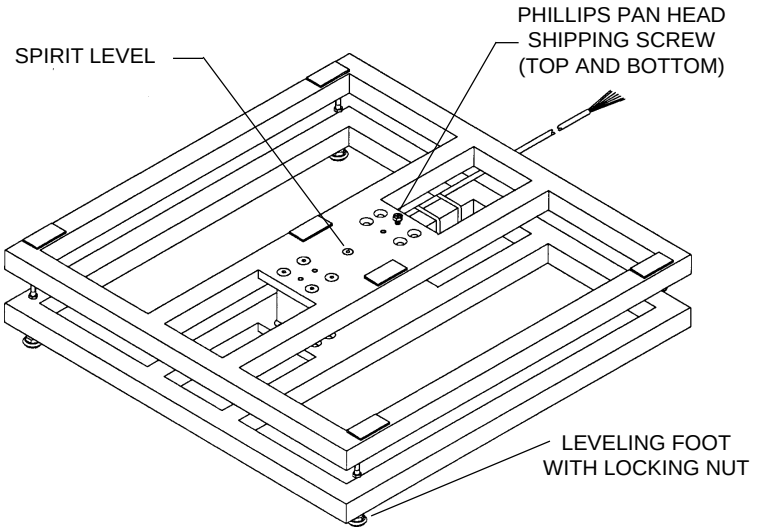
3. If the bubble is not centered in the scribed circle of the Spirit Level, loosen the Locking Nuts and adjust the Leveling Feet, either by hand or using an open ended wrench, until the bubble is centered.

NOTE: Ohaus Scale Bases are equipped with Leveling Feet which have provisions for using a wrench. This allows the Scale Base to be leveled without raising it to gain access to the Leveling Feet.

4. Tighten the Locking Nuts and replace the Platform.



12" x 12" and 18" x 18" Ohaus Scale Base (Platform Removed)



24" x 24" Ohaus Scale Base (Platform Removed)

Calibration

Refer to the Indicator Instruction Manual for system calibration procedure.

CARE AND MAINTENANCE

To keep the Ohaus Scale Base operating properly, it should be kept free from foreign materials. If necessary, a cloth dampened with water and a mild detergent may be used to clean models with a P or S suffix. Models with an AS suffix may be washed down with a hose. Wipe the unit dry with a soft cloth.

REPLACEMENT PARTS

	OHAUS Part No.
Painted Steel Platforms for Models:	
B10P, B25P, (12" x 12")	
78168-21 B50P, B100P (18" x 18")	
78168-22 B150P, B250P (24" x 24")	
78168-23	
Stainless Steel Platforms for Models:	
B10S, B10AS, B25S, B25AS (12" x 12")	78168-01
B50S, B50AS, B100S, B100AS (18" x 18")	78168-02
B150S, B150AS, B250S, B250AS (24" x 24")	78168-03
Adjustable Foot for Models:	
B10S, B10P, B10AS, B25S, B25P, B25AS, B50S, B50P	
B50AS, B100S, B100P, B100AS	76635-02
B150S, B150P, B150AS, B250S, B250P, B250AS	76635-03
Load Cells for Models:	
B10P	78200-02
B10S, B10AS	78200-12
B25P	78200-03
B25S, B25AS	78200-13
B50P	78200-04
B50S, B50AS	78200-14
B100P	78200-05
B100S, B100AS	78200-15
B150P	78200-06
B150S, B150AS	78200-16
B250P	78200-07
B250S, B250AS	78200-17

ACCESSORIES FOR CD- INDICATORS

Tower Accessory Kit	80250632
Base Mount Accessory Kits	
Indicator CD-11	80250686
Indicator CD-33	80250634

SERVICE INFORMATION

For service assistance in the United States, please call Ohaus Corporation toll-free at (800) 526-0659. An Ohaus Product Service Specialist will be available to help you.

SPECIFICATIONS

MODEL		B10P	B25P	B50P	B100P	B150P	B250P
Capacity	(lb)	25	50	100	200	300	500
	(kg)	10	25	50	100	150	250
Readability	(lb)	0.002	0.005	0.01	0.02	0.02	0.05
(Non type approved)	(kg)	0.001	0.002	0.005	0.01	0.01	0.02
Readability*	(lb)	0.01	0.02	0.05	0.1	0.2	0.2
(Type approved)	(kg)	0.005	0.01	0.02	0.05	0.1	0.1
Repeatability (Std. dev.)†		± 0.01%					
Linearity†		± 0.03%					
Safe overload capacity†		150%					
Load cell excitation (V dc)		5 to 15					
Operating temperature range		14° to 104°F/-10° to 40° C					
Scale base size (WxDxH) (in/cm)		12 x12 x 3.4/ 30 x 30 x 8.6		18 x 18 x 3.6/ 45 x 45 x 9.1		24 x 24 x 5.8/ 60 x 60 x 14.8	
Scale base construction							
Platform		Painted steel					
Frame		Painted aluminum		Painted steel			
Net weight (lb/kg)		10/4.5		35/16		71/32	
Shipping weight (lb/kg)		13/6		42/19		82/37	

	NIST Handbook 44 Class III
	14° to 104°F/-10° to 40° C
Model	NTEP No. 95-151
B10P	n_{max} 2500
B25P	n_{max} 2500
B50P	n_{max} 2500
B100P	n_{max} 2000
B150P	n_{max} 1500
B250P	n_{max} 2500

* In type approved applications, readability is limited to capacity/$n_{max.}$

† Specifications are given as a percent of the rated load.

SPECIFICATIONS

MODEL		B10S	B25S	B50S	B100S	B150S	B250S
Capacity	(lb)	25	50	100	200	300	500
	(kg)	10	25	50	100	150	250
Readability	(lb)	0.001	0.002	0.005	0.01	0.01	0.02
(Non type approved)	(kg)	0.0005	0.001	0.002	0.005	0.005	0.01
Readability *	(lb)	0.005	0.01	0.02	0.05	0.1	0.1
(Type aproved)	(kg)	0.002	0.005	0.01	0.02	0.05	0.05
Repeatability (Std. dev.)†		± 0.01%					
Linearity†		± 0.02%					
Safe overload capacity†		150%					
Load cell excitation (V dc)		5 to 15					
Operating temperature range		14° to 104°F/-10° to 40° C					
Scale base size (WxDxH) (in/cm)		12 x12 x 3.4/ 30 x 30 x 8.6		18 x 18 x 3.6/ 45 x 45 x 9.1		24 x 24 x 5.8/ 60 x 60 x 14.8	
Scale base construction							
Platform		Stainless steel					
Frame		Painted aluminum		Painted steel			
Net weight (lb/kg)		10/4.5		35/16		71/32	
Shipping weight (lb/kg)		13/6		42/19		82/37	

	NIST Handbook 44 Class III
	14° to 104°F/-10° to 40° C
Model	NTEP No. 95-151
B10S	n_{max} 5000
B25S	n_{max} 5000
B50S	n_{max} 5000
B100S	n_{max} 5000
B150S	n_{max} 3000
B250S	n_{max} 5000

* In type approved applications, readability is limited to capacity/$n_{max.}$

† Specifications are given as a percent of the rated load.

SPECIFICATIONS

MODEL		B10AS	B25AS	B50AS	B100AS	B150AS	B250AS
Capacity	(lb)	25	50	100	200	300	500
	(kg)	10	25	50	100	150	250
Readability	(lb)	0.001	0.002	0.005	0.01	0.01	0.02
(Non type approved)	(kg)	0.0005	0.001	0.002	0.005	0.005	0.01
Readability *	(lb)	0.005	0.01	0.02	0.05	0.1	0.1
(Type aproved)	(kg)	0.002	0.005	0.01	0.02	0.05	0.05
Repeatability (Std. dev.)†		± 0.01%					
Linearity†		± 0.02%					
Safe overload capacity†		150%					
Load cell excitation (V dc)		5 to 15					
Operating temperature range		14° to 104°F/-10° to 40° C					
Scale base size (WxDxH) (in/cm)		12 x12 x 3.4/ 30 x 30 x 8.6		18 x 18 x 3.6/ 45 x 45 x 9.1		24 x 24 x 5.8/ 60 x 60 x 14.8	
Scale base construction							
Platform		Stainless steel					
Frame		Stainless steel					
Net weight (lb/kg)		10/4.5		35/16		71/32	
Shipping weight (lb/kg)		14/6		42/19		82/37	

Model	NIST Handbook 44 Class III 14° to 104°F/-10° to 40° C NTEP No. 95-151
B10AS	n_{max} 5000
B25AS	n_{max} 5000
B50AS	n_{max} 5000
B100AS	n_{max} 5000
B150AS	n_{max} 3000
B250AS	n_{max} 5000

* In type approved applications, readability is limited to capacity/$n_{max.}$

† Specifications are given as a percent of the rated load.

LIMITED WARRANTY

Ohaus products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period Ohaus will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to Ohaus.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Ohaus. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Corporation. Ohaus Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact Ohaus or your local Ohaus dealer for further details.

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